# Hitchcocks e Book

JUNE, 1931

TWENTY-SIXTH YEAR

the AMES

"DIAL MIKE"

Speedy

A modern dial reading micrometer that replaces " mikes " --Speedier to use-easier 'to read--Extremely accurate

Capacity one inch

Price \$12.50

from your dealer or postpaid

Simply move the thumb to open the anvils. Closes automatically onto part being measured. Spindle lock makes it an adjustable snap gauge if desired.

B. C. AMES CO., Waltham, Mass.

Detroit Office: 902 Stephenson Bldg.

UBLISHED AT 508 So. DEARBORN ST. CHICAG

### · HANNIFIN ·

#### **Pressure Regulating**



Valves

for

Air and Hydraulic Operation

The Hannifin Pressure Regulating Valve is needed for the efficient and economical operation of air-operated arbor presses, air chucks, oil and gas furnaces, etc.; also for hydraulic equipment operating at pressures up to 200 lbs.

The Hannifin Valve is unlike all others. Instead of a diaphragm it has a piston. This construction results in a full size orifice permitting a full unrestricted flow.

Pressure can be instantly adjusted to the



MODEL V
"PACKLESS"
AIR CONTROL
VALVE

Hand control model made in 3 sizes,



Spring return foot model, simply and sturdily made in 3 sizes, 361-361.

requirements of any operation to eliminate possible distortion of work as well as reduce air consumption. As two operations seldom require the same oresure. Hannifin Valves on all machines enable them to be operated independently at their most economical sorbing pressures.

Write for a copy of catalog illustrating and describing the complete line of Hannifin Air - operated Production Equipment.

#### HANNIFIN Manufacturing Co.

621 So. Kolmar Ave. CHICAGO, ILL.



MODEL F R
" PACKLESS "
AIR CONTROL
VALVE
Retary Disc Type

For heavy duty foot control of Arbor and Riveting Presses—large non-rotating cylinders, 34° size only.

# Machine Tool Blue Book

Selected Circulation 25,500 Monthly

JUNE, 1931

TWENTY-SIXTH YEAR

#### NOW is the Time!

Nearly every manufacturer is planning to spend money for better shop equipment—when business revives. Now is the time to tell him what you make and what it will do—while he is making his plans.

Don't wait until he is ready to buy—after he has made his selections.

If your competitors are curtailing their advertising, now is the time to increase yours—and get your message across at the right time.

And how can you cover the metal-working field more thoroughly, more effectively and more economically than through the pages of the "Blue Book"?—you can't. It follows the modern trend of greater values for less money—and it pays.

The publishers will be glad to talk it over with you—in person if possible, or by letter.

But it's your first move-and today is better than tomorrow.

Published By

Hitchcock Publishing Co. 508 S. Dearborn St., Chicago, Ill.

Consult the Classified Finding Index for your requirements



# CHASERS— As Accurate As Your Watch

Besides the regular milled NAMCO Circular Chasers which are accurate enough for most discriminating buyers, we offer these GROUND thread Chasers for use where an extraordinary, accurate thread finish is desired. NAMCO Circular Chasers with GROUND Threads will deliver finished pieces with watch-like accuracy.

NAMCO Circular Chasers may be used in either rotary or stationary NAMCO self-opening die heads. And remember that NAMCO Circular Chasers have ten times the life of ordinary chasers because they have more than ten times the amount of land.

Complete details are given in Bulletin TD-B.

#### The National Acme Co.

General Offices and Plant at Cleveland, Ohio



Branch Offices
New York, Chicago
and Detroit

Representatives in Principal Cities

### IT'S HERE! The Cincinnati



#### High Speed Cut-Off Machine

THE CINCINNATI High Speed Cut-Off Machine provides the ideal means of cutting steel alloys, brass, copper, aluminum, as well as fibrous, materials of all kinds into various shapes, sizes and angles, up 2½ inclusive.

THE CINCINNATI Cut-Off Machine uses 12 or 14-inch diameter abrasive wheels operating at peripheral speeds from 16,000 to 18,000 S. F. M. The cutting off wheel is completely guarded except for the portion necessary for the cutting operation.

Suitable for straight or angle cuts up to 45°. Graduations on table make angle cutting accurate and fast.

SEND FOR A BULLETIN— IT DESCRIBES ALL THE FEATURES OF THIS TOOL

#### The Cincinnati Electrical Tool Co.

Division of the R. K. LeBland Machine Tool Co.

2701 Madison Road,

Cincinnati, Ohio



ANUFACTURERS whose tool room work comes within a 13° swing will find this lathe of unusual value. All the outstanding features and refinements of the larger Monarch Model "C Lather are incorporated in this 13" machine. Just compare the many exclusive features of design that make it easier to handle and more economical to operate than ordinary lathes of equal size-

-16-speed headstock.

-Timkenized quick-change gear box.

Built-in leadscrew reverse.

-All bearings in apron are of the anti-friction type. Apron feeds controlled by eccentric ball levers -End gear train mounted on anti-friction bearings.

-Standardized flanged spindle nose.

Quick clamping tailstock

Anti-friction bearings throughout - 55 in all. They eliminate

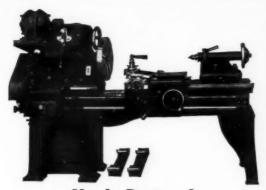
wear and give unusual accuracy enabling the operator to set the limits as close as he desires.

10-Improved lubrication. Head stock is oiled once each year, quickchange gear box oiled once a week, apron oiled weekly. Bulletin 143 gives the

facts. Write for a copy. The Monarch Machine Tool Co., Sidney, Ohio New York Sales Office: 857 Graybar Bldg.

marc Helical Gears - Timben Bearings

OOTHER..QUIETER..MORE POWERFU



#### Newly Designed Removable Block Gap Lathe

2 sizes, 16/25' and 18/27' swing. Any length Bed.

Belt Drive, All Geared Head Motor Drive or Belt Drive with Motorized Countershaft.

Especially suited for Repair Shops and Garages. Removable Bridge made in 2 sections.

Standard Equipment includes

CABINET LEG under headstock
DOUBLE BACK GEARS
QUICK CHANGE GEAR BOX
CHASING DIAL
LEAD SCREW AND FEED ROD
DOUBLE BRIDGE BLOCKS

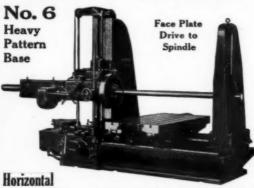
Also power cross feed, graduated compound rest and cross feed, steady rest, face and driver plates, tool post, centers, wrenches and double friction countershaft.

#### SMALL INVESTMENT. LOW COST OF UP-KEEP.

Write for "LN GAP" Descriptive Circular

The Rahn-Larmon Co.

# The New Improved DEFIANCE



#### Boring, Milling, Drilling and Tapping Machine

The Defiance Line of Horizontal Boring Mills embodies many special features including independent rapid traverse to head and platen in all directions, moving 84° per minute; thoroughly enclosed head; forced feed lubrication; centralized control; unit construction of head, feed and speed boxes, and many more efficient aids to production. Simplicity, great strength and ample power enable you to handle a wide range of work with profit.

Write for the descriptive folder, or for the complete Catalog of "The Defiance Line" of Cylinder Boring Machines, Heavy Service Drilling Machines. Rail Drills, Horizontal and Vertical Multiple Drilling Machines, and Valve Grinding Machines.

### The Defiance Machine Works Defiance, Ohio

Designers and Builders of Precision-Production Machine Tools and Special Woodworking Machinery IIIIIII THE IMPROVED II

### ARTISAN

Bench Lathe



#### Handles Work of Greater Size and Variety Than Any Other Lathe of Equal Size and Cost

Screw Cutting
Quick Change
"V" Belt Drive
11\* Swing—18\* between centers

8 Spindle Speeds
Back Geared
1/3 H.P. Reversible Type Motor
Power from Light Socket

15/16" hole through spindle permits passing bar stock, auto axles or drive shafts through the head for threading, tapering, etc.

Write For Full Information

#### ROCKY MOUNTAIN STEEL PRODUCTS

1358 Wall Street,

Los Angeles, California

Also Manufacturers of the "Improved ARTISAN" Master Lethe, floor type model, 36" between centers, swings 16" in gap.



Easy Engagement

Instant Release

Dragfree Idling

Abundance of Power

### THE CONWAY CLUTCH

Superior performance in every detail dictates the Conway Clutch as logical equipment wherever perfect control is a factor in efficient operation.

Its simplicity of construction is in keeping with the best practices of up-to-date design—lowers the user's cost from installation throughout the entire length of service. All parts are enclosed, perfectly balanced; action is centripetal—smooth as velvet on every function.

Acquaint our engineers with the H.P., R.P.M., and shaft diameter of your requirements for interesting recommendations. Or ask for Catalog P-20.

THE CONWAY CLUTCH CO. 1541 Queen City Ave. Cincinnati, Ohio

"The Conway Disc is a splendid Clutch"



#### A Single Spindle Footburt Sipp Sensitive Drill

Made in three sizes of single and multiple spindle models

#### More holes with this machine

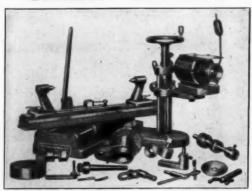
Why? Because you can change speeds in two seconds or belts in ten seconds—because the automatic idlers keep the belt pulling to capacity at all times—because the full ball bearing equipment and accurate machining gives a smooth, fast cut.

Write for No. 650 Folders

The Foote-Burt Company, Cleveland, O.



#### A New Universal Tool Grinder—The No. 2



#### Just the Grinder You've Been Looking For!

SPEED UP your cutter grinding with a SURFACER No. 2 Universal Cutter Grinder. It is extremely simple to operate and is quicky set up for any cutting tool. It has a large capacity, centers are adjustable to 14½°; cutters 6° diameter, 9° long; universal attachment, vertically, grinds saws and cutters to 16° diameter.

Your tool crib attendant can sharpen all types of cutting tools on this grinder, converting his non-productive time to tool maintenance. The grinder is portable and therefore takes up no valuable floor space.

The low cost of the No. 2 Cutter enables it to pay for itself in a very short time. Every shop can afford to install it as it sells for many times less than other grinders that do the same precision work. It will pay you to investigate the SURFACER No. 2 Grinder.

If Your Machinery Dealer Cannot Supply You, Write Us
Today for Complete Information and Prices

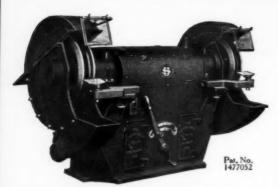
The Surfacer Manufacturing Co. 2454 Irving Park Blvd., CHICAGO, ILL.

### HAMMOND

#### **GRINDERS&POLISHERS**



Hammond Machinery Builders



U. S. Variable Speed Grinder

# Forget Obsolescence!

Patented, exclusive features! Exceptionally rugged construction! Smooth, ball bearing operation! These are some of the reasons you can hold grinding costs to the minimum longer with the U. S. Variable Speed Grinders (A. C.). You can forget obsolescence with them in your shop. For instance, the Gibbs

V-Disc Transmission of GRAPHITIZED MICARTA enables you to maintain a constant wheel surface speed clear down to the flanges. (An exclusive U.S. feature). Ask your distributor for full particulars or write us direct today.



The United States Electrical Tool Co. 2461 W. Sixth St., Dept. D. Cincinnati, Ohio

Canadian Division-MAPLE LEAF ELECTRIC TOOLS, Ltd.-Toronto

# Type A. C. "STANDARD" Spot Welder



#### Positively the Lowest Priced Spot Welder Built, Quality Considered

7½ K. V. A. 2\* horns with water cooled points. 6\* and 12\* throat Swivel treadle 6 step regulation

Send samples or blue prints for quotation on special equipment. We can save you money.

The Lenney Machine & Manufacturing Company Warren, Ohio

## GRAND RAPIDS No. 2 Hydraulic Surface Grinder



#### 3 Times Faster than Mechanical Feed Machines

BY SIMPLY moving the control lever on front of base, you obtain an infinite varation in speeds—from a stopped condition up to 60° or more per minute. Cross feed can be varied from .01 to .125, and this can be made to operate at either end of the stroke, or at both ends, as desired. Cross feed is also operated hydraulically. Working surface of table is 6°x 18°.

#### Finished Work Excels in Quality and Accuracy

Being hydraulically operated, the machine can be run at say 60' per minute with less shock at the point of reversal than is encountered in mechanical feed machines operating at one-quarter this speed. Tests have shown there is no more wheel wear involved taking a given depth of cut at high speed than there is taking the same cut at low table travel—and the quality of grinding work is in most cases even better as to finish as well as accuracy.

Write for Illustrated Folder Describing This and Our Four Larger Sizes of Hydraulic Feed Surface Grinders

### GAILILMHEYER AND LIVINGSTON CO.

342 Straight Ave. S. W., Grand Rapids, Mich.

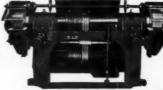
### The "Daily Grind"

#### A STANDARD

#### No. 50 HIGH SPEED SNAGGING GRINDER

SKF Bail Bearings

Dayton "V" Cog Belts



G. E. 40° Motors

Push Button Control

Horse- Power	Diam.	WHEELS Face	Hole	"V" Belts
71/6	20"	2" to 4"	10" or 12"	3
7½ 10	248	2" to 4"	10" or 12"	3
15	30*	2" to 4"	10° or 12°	4



#### HEAVY DUTY GRINDERS

G. E. 40° motor and push button control. Four SKF ball bearings. Nickel steel armature shaft. Adjustable guards. Made in 5, 7½ and 10 H.P. sizes.

Catalog on request

The Standard Electrical Tool Co.
1952 West 8th St., Cincinnati, Ohio

A Sensitive Drill

For High Production

avey

No. 2 High Duty Ball Bearing

#### **Drilling Machine**

IN THIS sensitive, high speed drill you have simple, sturdy construction which assures accurate drilling on a production basis. Costs are naturally low due to rapid production and freedom from drill breakage,

This machine can be furnished in single spindle or multiples up to six spindles, floor or bench type.

What are your requirements?



#### BERJO VISE GRIPS

View below (top plates removed) shows how the variable jaws conform to shape of work.



THIS unique device saves time on machine operations and eliminates costly holding fixtures where you have short runs.

No matter what shape the work is, the BERJO assumes the contour of the piece and grips it firmly.

Complete descriptive matter at your request

The Avey Drilling Machine Co.

# A Combination GRINDER

WITH A MULTITUDE OF USES --



2 H.P., 3 Phase, 220 or 440 volts. 1800 R.P.M. at 60 cycle. 40" C Rise Constant Duty. Nine motor leads are brought out in switch box for ready connection to either 220 or 440 volts. Diameter of spindle at wheel, 11/4". Equipped with 14"x2" grinding wheel. Net weight of Grinder, 167 pounds; 200 crated. Height 151/2", Width of base 91/2", Width of Guard 15". Net weight of Base, 46 pounds. Shipping weight, boxed 290 lbs., crated, 260 lbs. (Can be furnished in 110 or 220 volt D.C.)

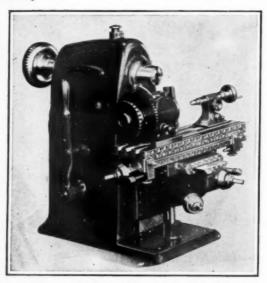
A Sales Representation Is Open in a Few Localities

#### STOODY COMPANY

MANUFACTURERS

WHITTIER, CALIFORNIA

# ataract Motor Driven



1/2 inch or 3/4 inch Collet Capacity

Working surface of table, 12 by 3% inches; longitudinal table travel, 51/2 inches; transverse table travel, 4 inches; vertical table travel, 61/2 inches; range of speeds, 175 to 1400 revolutions per minute; and weight, 105 pounds.

Hardinge Brothers Inc 4149 Ravenswood Ave.

# Two-Spindle Vertical Attachment for the

# SUPERIOR Hand Miller

Adapted to perform two operations on the same piece, or a different operation on two different pieces.

> This two-spindle vertical milling attachment is carried on the main sliding head, and the vertical spindles are mounted on Timken Roller Bearings. The spindles are provided with spring chucks and draw-in bolts so that straight shank end mills can be used.

#### Accuracy, Versatility Facilitate Production

These attachments are running continuously, day and night, in many plants and are performing successfully the operations on a variety of pieces. The very best of materials and workmanship insures long life together with perfect alignment and ease of operation.

Write Us Today for Descriptive Literature and Price

We are also Designers and Manufacturers of Special Machinery, Tools, Dies, etc., as well as of Experimental and Model Work.

Superior Machine & Engineering Co. 1920 Ferry Park, 191 Petroit, Mich.

#### **Bay State Handy Vise**

Handles a Wide Variety of Work-



without clamps, parallels or other bothersome, clumsy tools

Here's the vise that will handle your miscellaneous tapping, drilling and grinding jobs—and save you time and money at the same time. The Bay State Handy Vise is a real combination tool—vise, angle iron, parallel V-block, clamps—all in one! Light, but sturdy, made of steel throughout, hardened and ground accurately, parallel and at right angles. Saves set-up time—no clumsy, heavy tools to bother with. Write for folder illustrating and describing this Handy Tool.



#### VISE PRICES:

Capacity it opening \$30.

Capacity 4' opening \$25.

#### **Bay State Hand Tapper**



#### Will Cut Your Hand Tapping Costs 75%

The Bay State Hand Tapper enables you to turn out accurate work quickly and easily. Cuts labor costs, eliminates spoilage of work and tap breakage, assures tapping that is uniformly true.

Extremely simple in construction and operation—requires no setting up whatsoever—just place the work on table against stop pin and pick spindle with size tap wanted. Insert spindle into bracket sleeve and turn the crank. You can't start wrong, nor get the tap out of alignment after starting.

Discard your obsolete tap wrenches - save time, trouble and money with Bay State Hand Tappers.

Write for Details and Low Price

Bay State Tool & Machine Company
414 Albany St., Springfield, Mass.

THE HAMMOND AUTOMATIC Tapping Machines are designed to rapidly and efficiently perform drilling, tapping, stud, nut and screw driving operations.



Drilling radius 4' 0" Capacity ¾" drills, %" taps, ½" studs

á.

Write for full information

The Hammond Manufacturing Co. 7808 Kinsman Road, Cleveland, Ohio



FULLY UNIVERSAL, simple to operate, always ready for any job from the smallest to the largest—The Marvel No. 8 Band Saw is a standard tool in hundreds of the best shops. It cuts off square or any angle, right or left, to 45 degrees, has a large, roomy bed or work table, three cutting speeds, quick acting vise, ball bearing band wheels, carriage and guide rollers. Handles a great variety of work and is unequalled in range, accuracy, speed and economy.

Write Us Today for Complete Details

ARMSTRONG - BLUM



Entirely Automatic—Feeds the Bar—Produces Duplicate Pieces at Tremendous Cutting Speed

THIS NEW Heavy Duty, Automatic High Speed Hack Saw will replace from six to eight ordinary hack saws on production work, making possible a great saving in time, floor space, labor and expenses. Feeds bars to any length from 1/2 in. to 26 in. and will cut 4 sq. in. per minute, floor to floor, in mild steel and 2 sq. in per minute in annealed high speed steel. Write for complete specifications and prices.

TWO SIZES No. 6A Capacity 6'x6' No. 9A Capacity 10'x10'

MANUFACTURING CO. CHICAGO, ILLINOIS

# NOC-OUT Accurate

Fast **Economical** 

ROLL FEEDS

Why use slow, costly hand feed methods when the NOC-OUT Reversible Feed offers you the many advantages of automatic feeding? It keeps production at a steady level, assures maximum output of each press-by eliminating the human element and its costly delays.

Automatically feeds any stock from coils in lengths of from 0 to 30 inches per stroke of press. Mounts on bolster plate, either right side, left side or front, requires no alteration of press. Feeds from right to left, left to right, or front to back as conditions may require.

Write TODAY for a copy of Bulletin "H" describing the various NOC-OUT Models and Our Free Trial Offer.

We design and build progressive and automatic dies or high speed production. Submit samples of your stamping for estimate.



Wittek Mfg. Co. 4309 W. 24th Place, Dept. "H" CHICAGO, ILL.

### Here-take one



#### Free Trial

Only \$25.00 after it shows what it saves

Madison-Kipp Air Tools—Filer
—Chipper—and AG Grinder—
cost only \$25.00 each, and frequently save that much in a week.
They relieve high-priced toolroom workers of the arduous,
costly jobs of finishing by hand
to close tolerances in inaccessible
places.

One or all of these Kipp Air Tools sent on free trial for ten days to any firm having a satisfactory credit rating. You are

ø

under absolutely no expense until you have tried them and seen what they can do.

In the drive on costs, that faces every plant today — you need these tools . . . Mark your selection in the order blank below . . . send no money.

HECK MODEL DESIRED

ORDER BLANK				
MADISON - KIPP CORP'N		Air Pressures	in	Priced U.S.A.
217 Washesa Street, Madison, Wis.	□ Filer	40-120 lbs.	S. P. M. 500 to 5000 B. P. M.	\$25.00
Send Kipp Airat	☐ Chipper Grinders	40-129 lbs.	6,000 R. P. M.	25.00
5 net 30 days, postpaid. If it is not sat- isfactory, we will return	AGL AG	30-50 lbs. 50-100 lbs.	40,000	25.00 25.00
invoice and tool on or before the 10th day after regular order form, please arrangement on your orde	attach this coup	on to it, and		
Ship to		State	**********	
Address	****** **********	Signed	***************	*******
City		Title	*************	

#### Analysis of Circulation of HITCHCOCK'S MACHINE TOOL BLUE BOOK By Dun and Bradstreet Ratings

(Corrected to September 1st. 1930)

To domestic concerns, and superintendents, works managers, production engineers, etc., in such concerns rated at—

	1,937
\$500,000 to \$1,000,000	1,486
\$300,000 to \$ 500,000	1,402
\$200,000 to \$ 300,000	
\$125,000 to \$ 200,000	1,892
\$ 75,000 to \$ 125,000	1,827
\$ 50,000 to \$ 75,000	1,558
\$ 20,000 to \$ 50,000	3,190
\$ 10,000 to \$ 20,000	2,132
\$ 5,000 to \$ 10,000	1,604
Purchasing Officials, Government and Mu-	
nicipal Plants, Technical Schools, Selected Foreign Importers and Users, Etc.,	
	2,990
Foreign Importers and Users, Etc., TOTAL to Buyers of Known Responsibility_ *Concerns quoted in Dun or Bradstreet, but without Capital Rating	2,990
Foreign Importers and Users, Etc., TOTAL to Buyers of Known Responsibility_ *Concerns quoted in Dun or Bradstreet, but	2,990
Foreign Importers and Users, Etc., TOTAL to Buyers of Known Responsibility_ *Concerns quoted in Dun or Bradstreet, but without Capital Rating Concerns not yet in either Dun or Bradstreet,	2,990 21,324 2,232
Foreign Importers and Users, Etc.,	2,990 21,324 2,232 1,424

<sup>\*</sup>This group includes a considerable number of large concerns, and some small ones of high credit, whose capital rating is not given by either of the commercial agencies.

#### STEVENS DIVIDING HEADS

(FORMERLY GARVIN)

PLAIN TYPE-Made in Two Sizes-10" and 11"



#### DOUBLE GEARED-BARREL TYPE Made in Three Sizes-10\*, 12\* and 14\*



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\*

A.

#### Special Circular Sent on Request Manufacturers Of

Double end horizontal drills, milling machines and attachments, milling machine vises, dividing heads, index centers, single and multiple spide, hand screw machines, cutter grinders, screw slotters, hand lathes, collet chucks, oval chucks, rotary tables, hex square milling fixtures, air devices, oil pumps.

Repairs on GARVIN Machines of Our Manufacture

JOHN B. STEVENS INC. 306 Hudson St. New York City



#### STACKBINS — are already Saving Their Cost Many Times Over

Can be used in various ways in any plant with a saving of time, as well as space.

For instance, on the assembly bench, these Bins make it possible to place more parts within convenient reach of the assembler, enabling him to do more work with less effort. Ideal for stockroom or toolcrib.

Made in four standard sizes, but can be furnished in sizes to meet your particular needs.

Bin No.	Width	Height	Length
1	5½ in. 7½ in.	4 in.	12 in.
2 3	7½ in.	5½ in.	15 in.
3	9 in.	6½ in.	181/4 in.
4	12 in.	9½ in.	20 in.

#### STACKBIN CORPORATION

Pearl & Rice Streets,

Addresa

Providence, R. I.

Stackbin Corporation	
Pearl & Rice Streets	
Providence, R. I.	
Kindly send descriptive circular and quote prices on Stackbin equipment.	
Name	

Title .....

Firm

# "That's the Machine I Want" THE KELLERFLEX



#### Because

"-tools last longer with this machine. It is a quality machine thoroughout, yet moderately priced through the savings of quantity production.

Ball Bearings throughout the drive from motor to the handpiece. Adjustable V-belt transmits a powerful drive without vibration. The whole motor mounting is carefully balonced and swivels as easily as wiggling a finger. Four normal speeds with provision for a high speed attachment, giving up to 10,500 RPM."

KELLER MECHANICAL ENGINEERING CORP.
58A Washington Street, Brooklyn, New York

Complete stock at Chicago and Brooklyn

## Norgren Regulating and Reducing Valve

For Air, Steam, Oil, Water and Non-Corrosive Gases



#### A Revelation! in Greater Volume and

Closer Regulation Simply designed; precision machined;

exclusive features; all essential parts accessible without removal from line.

Styles and sizes for various secondary pressures from 0 to 125 lbs., with inlet pressures up to 225 lbs.

Send for New Catalog

#### Norgren Sight Feed Automatic Air Line Lubricator



The NORGREN SIGHT FEED AUTO-MATIC AIR LINE LUBRICATOR not only provides a simple means of injecting lubricant into the air stream of pneumatically operated tools, but of even greater importance, the operator can SEE what amount of lubricant is entering the line.

It is adjustable to any demand by means of a needle valve and is entirely automatic in that it operates only when the air is in motion. There are no working parts.

You cannot forget to shut off the NORGREN Labricator. You cannot forget to turn it on. It is easily filled and positive in action.

Manufactured by

CARL A. NORGREN CO., - Denver, Colorado MANUFACTURERS OF Strainers, Blow-Valves, Blow-Guns, Air Chucks, Engine Cleaners, and Patented Couplings for Industrial, Acytelene, Service, Hi-Pressure Gresse and Metal Lined Paint Hose.

Eastern Distributor-J. N. Fauver Co., 31 Brady St., Detroit, Mich.

### Threading 1200 pieces per Hour

These brass wing screws shown are being threaded on our



#### Standard High Speed Tapping Machine



Let us show you what can be done on your work

Leland-Gifford Company, - Worcester, Mass., U.S.A.

BRANCHES

BOSTON CHICAGO CLEVELAND DETROIT NEW YORK PITTSBURGH ROCHESTER

**AGENTS** 

F. E. Satterlee Company Smith Booth Usher Co... Herberts-Moore Machinery Co., San Francisco F. F. Barber Machinery Co.

LELAND GIFFORD

### **DELTA** V-BELT DRIVE

FRACTIONAL HORSEPOWER

Scientifically designed from years of experience with the V-Belt drive.

Pulleys correctly grooved to fit V-Belts of ½" width, 11/32" thickness, 38° angle. Pulleys from 2" O.D. and up. Pulleys with 3/4" and 5/8" bore have 3/16" Keyway.

Self-aligning Hangers for 3/4" line shaft.

Sturdy flexible couplings delivering 1 H.P. at 1750 R.P.M.



Write for FREE descriptive folder









#### DELTA SPECIALTY CO.

Dept. RB-2

3775 North Holton St., MILWAUKEE, WIS.

#### Something New



#### The Pedrick Boring Unit

This picture of drilling an overhead beam is only an indication of what the Boring Unit can do. It is intended more for other work than for drilling, but to get the whole story, write for a circular.

The Boring Unit removes the limitations from the portable boring bar, and reaches a field of work that otherwise requires the largest machine tools.

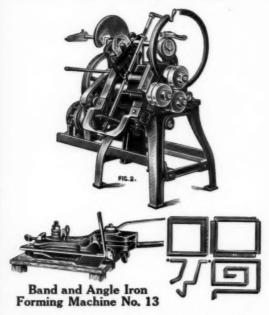
#### Pedrick Tool & Machine Co.

3644 N. Lawrence St., Philadelphia, Pa.

Builders of Portable Cylinder Boring Bars, Crank Pin Turners, Portable Millers, Pipe Benders, etc.

### **EXCELSIOR**

Circular Angle Bending Machine No. 14



Mfgrs. of Shearing and Punching Machines, Automatic Polishing and Buffing Machines.

Excelsior Tool & Machine Co.
East St. Louis, Illinois

# RAPID-FIRE FILER

THAT is fully automatic in its operation - for filing circular saws - used in cutting soft or medium tempered metals. is offered by The Wardwell Manufacturing Co. at a special new low price. This machine is forty times as fast as any hand method and for accuracy is mechanically perfect.

Write for our complete catalog



The Wardwell Manufacturing Co. 3165 Fulton Rd., 1-2

**Model** 

4.19

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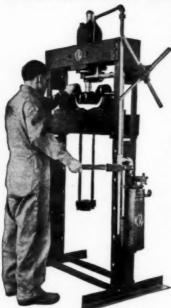
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# KRW ARBOR PRESS NEW 1931 MODEL

Many New Improvements for Perfection of Operation and Convenience Gives You All Around Efficiency at Low Cost



A new double acting piston fills cylinder with oil as the ram is brought down by means of the hand wheel of unique design—sliding handles which pull out to the ends greatly increase theleverage.

Side members slotted to permit long bars to pass thru.

35 tens Capacity

Direct to You \$125.00

F. O. B. Factory

Complete with all attachments as shown

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K. R. Wilson Shop Equipment Sales Co., Los Angeles, California Export Department: 126 Liberty St., New York City

# The New Type CC Power Screw Press

Insure Perfect Alignment of Punch and Die with this

#### ONE MAN PRESS

One man can do more, better and speedier work than two men can do on any other type of press. Rigid, powerful, delivers 100 tons pressure. No tendency to nick or gouge dies-insuring perfect work. wedging or prying. button type Push switch, conveniently located, enables operator to start, stop or reverse ram without taking his eyes off his work.

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Also Hand Screw Presses 25 and 80 Ton Pressures

#### Surface Grinder

Silent efficiency is the action of this powerful and rigid surface grinder—equipped with graduated feeds and all the latest attachments.

Prices and details on inquiry

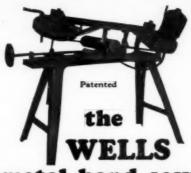
#### JARECKI MACHINE AND TOOL CO.

Department A GRAND RAPIDS,

MICHIGAN







#### metal band saw

incorporating the advantages of a back saw with the cutting speed and economies of a band saw.

#### features:

Self contained and portable if desired—rapid cutting with extreme accuracy—long life blades, low blade expense. A wide range of usefulness—economical operation.

The WELLS SAW cuts soft and hard, ferrous and non-ferrous metals\_thick and thin sections—pipe, tubing, strips, etc.

No change of blade or speed—cuts high carbon steel then soft brass rapidly and accurately.

Hundreds of duplicate pieces cut with a variation of less than .004°.

Saves stock—width of cut less than  $\frac{3}{44}$ ,—blade .025\* thick rigidly supported in six ball bearings.

Durable construction for hard service-strength without excess weight-ball bearing.

#### A Saw for Production, Maintenance and General Service

We wish you to have descriptive literature—your name and address please—today? Saws will be placed on trial.

Metal Saw Division

### WELLS MANUFACTURING CORP.

Three Rivers, Michigan

Exclusive territory being allotted-representatives and dealers interested, please write.

Taylor & Fenn Belt Driven

# No. 12 Spring Press



# UNIFORM BLOW SPRING PRESSES

Are made in three sizes, with either single or double action

Our No. 12 Belt Driven Spring Press, illustrated above, has a stroke of 3½ inches. The foot treadle operates a safety clutch attached to the flywheel, which automatically stops the machine after each stroke regardless of whether the treadle is released or held down by the operator. The clutch can be adjusted for a continuous stroke if desired.

Descriptive circular gladly sent upon request

The Taylor & Fenn Co. Hartford, Conn., U.S. A.

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### SHELDON MILLING VISES



The swivel vise is the plain vise with the addition of a circular base, graduated in degrees. It can be removed from the circular base and used as a plain vise if desired.

#### Specifications and Prices

No.	Width	Depth Jawa	Jaws Open	Plain Vise		Swivel Vise	
	Jaws			Weight	Price	Weight	Price
3 4 6 8	31/4 4/2 6/4 8/2	136 146 2 242	21/2 31/2 41/2 61/2	15 lbs. 30 lbs. 70 lbs. 160 lbs.	\$16.00 \$20.00 \$30,00 \$45.00	25 lbs. 45 lbs. 90 lbs. 225 lbs.	\$20.00 \$24.00 \$40.00 \$60.00

#### SHELDON DRILL PRESS VISE



No.	Width of Jaws	Depth of Jaws	Jaws Open	Weight	Price
D-4	436*	136*	4*	15 lbs.	\$12.00
D-4 D-6 D-9	612	132	6*	35 lbs.	\$18.00
D-9	Q#	2%*	91	70 lbs.	\$24.00

SHELDON MACHINE CO. 3250 Cathage Grove Ave.

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#### NEW!

For the first time in the history of the machine tool industry, radial adjustment of a tool-carry, ing cross slide in a rotating tool head is brought under absolute micrometric control of the operator, either in or out, while the tool head and machine spindle are rotating and the tool is cutting.

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The clear-cut ability of this Tool Head to do what no tool has ever done before has rated it as "absolutely indispensable" in many of the finest plants in the country, while its instant readiness for any job, as well as its accuracy, simplicity and ruggedness have brought us repeat order after repeat order. Made in three sizes with maximum ranges of 0 to 6,0 to 12, and 0 to 24, respectively. Shanks No. 2 to No. 6 Morse or No. 7 to No. 18 Brown & Sharpe.

We have just issued Bulletin 34, fully describing this Tool Head, which we shall be glad to send to any address.

THE PRECISION TOOL COMPANY BRIDGEPORT, CONNECTICUT



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Hitchcock's Machine Tool Blue Book will deliver your message to more responsible users and buyers of machine tools, including automotive and other large manufacturing plants, railway mechanical officials, etc., than any other publication on earth. If your product is right and your copy is right, then the use of the Blue Book as your advertising medium completes a combination that is unbeatable.

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Operating handles will not become disengaged-Roller bearing-

Capacity 1/4 hole through 1/4 iron. Made in 3 Sizes: 7, 71/2 and 8. Weight, 16 lbs.

# No. 40



Capacity, %" thru %" iron. Weight complete, 87 lbs.

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Capacity 3/4" thru 3/4". Weight II lbs.

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Capacity 3"x3"x1/4" Angle Iron Weight 154 lbs.

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Will shear 1/4" Thickness or Lighter Weight 12 pounds.

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Speed
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#### 12'x36" Thompson Universal Grinder

Does every grinding operation required in the machine shop. Lowest cost work for plain, surface, die, cutter, edge and internal grinding. All standard machines equipped with auxiliary independent coarse cross feed for surface grinding.

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NUMEROUS TYPES FOR ALL KINDS OF WORK.

Round and Flat heads, hollow and cheek rivets from .008" to 1/16" without distortion or breaking of fragile material. In places inaccessible by any other method.

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Established 1883

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that grinder or drill that just cannot get enough coolant—let us show you how to quench its thirst, and make it produce more work at lower cost.

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Power Speed Versatility

with a rem travel of 27 feet per minute this press develops 10 tons pressure.

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#### For Metal Cutting Operations



The "Jarvis" Bench Band Saw cuts metals—straight; curved or bevel. It is motor driven, operates from a lamp socket and is vibrationless. Ball bearing disc wheels, worm drive.

12" size cuts up to 1½" cold rolled steel. 16" size cuts up to 2" cold steel. Also made for cutting soft metals, Bakelite fibre, transite, wood, etc.

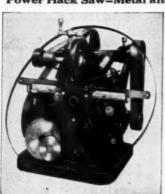
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Power Hack Saw-Metal and Wood Cutting



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We also will sharpen your high-speed power back saw blades with 10 teeth per inch and coarser, at fifty cents each, regadless of size, in quantities of twelve or more.

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METAL SAWING MACHINES

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# LIBERT High Speed SHEAR

Guaranteed rapid accurate cutting of regular or irregular shapes from inside of large sheets as well as outside.

Edges true, square, and so smooth that file finishing is unnecessary. Foot control leaves both hands to guide work.

#### Made in 3 Sizes

14 gauge 30" throat bench type,

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Perfect circle attachment for cutting 1½° O. D. to 36° O. D. circular blanks from large sheets, standard equipment on all machines.



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LIBERT MACHINE CO., Green Bay, Wis.



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of a
NEW TOOL
Each Time
You Use
THE

#### **COLONIAL Broach Sharpener**

Specifically designed to sharpen broaches the COLONIAL produces the equivalent of a new tool at each grinding. It grinds the difficult undercut easily, increases the life of your broaches—releases larger machines for their regular work. And it does all this in one-third the time at cost savings that average 65% or more! It will pay you, in dollars and cents, to investigate this modern machine.

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On Your 1-Spindle Drilling Machine

> The U. S. Multiple Drill Head converts any single spindle drill into a multiple drill press with two to six adjustable spindles that will drill any pattern while utilizing the same speeds and feeds required for drilling one hole at a time.

Send your problems to our drill-head experts If necessary, they can design special heads with fixed or adjustable spindles to fit your needs.

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Accuracy and Output Both from this Bench Drill

Speed without vibration is the reason why the Burke No. 222 Bench Drill is so productive on accurately drilled holes up to 3.8.

A good range of speeds—1150 to 2600 R. P. M.—permits the handling of a wide variety of work, and a four-position hand wheel facilitates operation. Spindle is of special steel, counterbalanced, and tapered to fit Jacobs or Almoad Chuck.

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"V" Belt Drive—3 speeds, hinch capacity—Jacobs Chuck—Ball Bearings "repulsion induction type of motor—3hinch travel of spindle—snap switch built into motor—quick return spindle—cord and plug furnished.

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Complete with Push Trolley and Collectors

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Stand more strain and wear than is required under roughest conditions. All gears, pinions and interior gear ring are machine cut from solid steel forgings. Load sheave made from entirely machined and hardened forged steel giving smoothness of operation and long life to this vital part. The load chain is high grade steel, electrically welded, the suspension is also all steel, affording maximum safety, strength and protection. Complete details on request.

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1	45.00	4	110.00
13/2	60.00	5	140.00
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Special Proposition to Dealers

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You never saw anything to equal this B-9 Belt Grinder and Polisher. 2 in one. Vertical to horizontal position in 30 seconds—2 speeds—vacuum dust collector—graduated table to 45° up or down—compound angle work quickly done—quick belt tension adjustment and other features that insure low maintenance cost, smooth operation and long useful life of machine.

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Machine Tool Builders for 25 Years

# PORTER-CABLE

# Winterhoff DRIVEN Portable Tools



**Repulsion Induction Motor** 

Double End Grinders Double End Disc Grinders Combination Tool & Disc Grinders

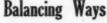
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#### **Exceedingly Sensitive**



#### Easy to Manipulate



Made in six sizes to balance anything that revolves from a crank shaft to a 24,000 lb. turbine rotar. They require no special leveling, no adjustment, and no centers.

Equipped with glass-hard spindles, chilled steel discs, and especially sensitive ball bearings, to give accurate, long time service.

"Swing"	20*	40°	60°	72*	96*	72*
Greatest distance bet, standards Capacity in lbs Approx. shipping weight	20° 1000 45	30° 2000 90	30° 2000 150	66° 5000 350	88* 10000 650	20° 24000

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# Any Length Job Straightened



The Acme of Convenience In Shop Factory Toolroom Garage

By straightening any length rough or finished work — truing syrung tools, and testing cams, crakshafts, etc., the Springfeld makes itself invaluable in shop, factory, toolroom or garage. Its arrangement is the acme of consensions. It can be placed on bench, or beside lathe—saving many steps and waste handlings.

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We also manufacture Engine Lather and Shapers

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WE MANUFACTURE sensitive drills exclusively. They are built for *service*, and in quality are unsurpassed.

SIGOURNEY DRILLS are made with one to four spindles. The illustration shows our one-spindle ball bearing drill. It has vertical adjusting head, adjustable table, three speeds, runs true and is very sensitive. All parts are interchangeable. Shipped belted ready for use.

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### Gem Drill Press Vise

Holds tapered and irregular shaped pieces firmly



Made in three sizes up to 10½ in.

ITS STRENGTH, capacity, adaptability and quickness of setting make it the most efficient vise on the market. Swivel jaw adjusts automatically to odd shaped pieces. Adapted to an unusual variety of drilling and milling operations. A big time saver. Worth more than it costs.

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Outlasts a Dozen Cheaper Dressers

The "Champion" is made by experts, for long life and the best service. The only dresser that runs in an oil bearing.

The most economical dresser you
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of the best grade of tool steel,
milled and heat-treated and tempered
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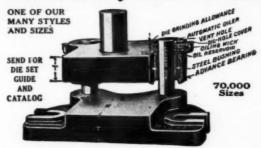


Showing a Ford Front Spring Hanger tooled complete on our Type A-Jr. Drill Jig.

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THE SIEWEK TOOL CO.

## **Automatically Oiled Die Sets**



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GENERAL OFFICE AND WORKS

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### NEW-DIJAK Opens Dies and Die Sets

Open

SUPERIOR DIE SETS are furnished with center punch marks, an exclusive feature assuring accuracy, avoiding costly slipups, saving time and material. Also the only standard die set equipment with patented oil groove Leader Pins. All styles and sizes in stock.

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It's no longer necessary to lose valuable time and money employing the antiquated "Bar Prying" method necessitating two men, with the ever present danger of jimmying dies, bending punches, etc., as it requires one man only a few seconds with a DijAK.



### MORE PRODUCTION



With Higher Speed, Less Spoiled Work, Fatigue or Broken Taps

# **ETTCO**

High Speed-Sensitive

#### TAPPING ATTACHMENT

Certainly You Can Be Guided by the Judgement of Hundreds of Factories Who Use ETTCOS.

FIVE SIZES-UP TO ONE INCH TAPS

Try Ettcos at Our Expense. We have a nice New Circular??

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(for Alternating Current)



#### NEW UNIPOLE TYPE - HEAVY DUTY

Designed to remove all traces of residual magnetism from work finished on magnetic chucks.

Supplied for either 110 or 220 volt current.

Requires no counter-shafts, belts or intricate electrical connections.

Simply plug into lamp socket or receptacle.

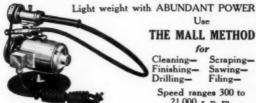
Size 12\* long, 9\* deep, 6\* high. Weight 35 lbs. Attractive switch cover plate contains complete instructions for operating.

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Mall

#### HEAVY DUTY-HIGH SPEED Die Sinking Machines



Use

THE MALL METHOD

for

Cleaning-Scraping-Finishing- Sawing-Drilling-Filing-

Speed ranges 300 to 21,000 r. p. m.

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Standard hardened and ground to within .0002" over listed sizes. Also carried oversize .001" for use in repair work, etc. Ask for Bulletin No. 551.

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All types and materials including ground thread worms

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TYPE "TF" (TIMKEN BEARING EQUIPPED)

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#### IMMEDIATE SHIPMENT

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We Recommend Formica for Silent

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#### GOOD GEARS at LOW COST

CROFOOT GEARS are moderate in cost, due to our volume and specialization. This worthwhile saving is yours, as well as our free advisory service of experienced engineers who are always ready to help you solve your gear problems. We offer prompt delivery of gears in any material, from ½8 to 36°. Try CROFOOT on your next order.

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In Stock
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All Types
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# "ALNOR" Pyrometers

for the Hardening Furnace

#### MODEL 223

Inexpensive, yet accurate and durable, the ALNOR Pyrometer is used by large and small shops everywhere for heat-treating work. Because of its low first cost and compact size it is also

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ECONOMY in manufacture results from specialization—and we have been specializing in the manufacture of Hollow Bored Forgings and Shafting for many, many years. That's why we can make hollow bored parts of any material, size or quantity—to any

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Send Us Your Blue Prints for An Estimate

American Hollow Boring Co., 1035 West 19th St.,

# Steel Spacing Washers-

Made of a good grade of Cold Rolled Strip Steel, also known as Shim Steel



Stock sizes for arbors of following diameters: 36, 16, 56, 34, 76, 1, 176, 174, 174, 174, 174, 174, 274, 274, 2, 3, 372 and 4 in. and larger.

Stock thicknessest .002, .003, .004, .005, .006, .007, .008, .010, .012, .015, .020, .025, .032, .047, .063, .093 and .125 inch.

Other thicknesses up to 3.000\* made to order, with keyways if so ordered.

Ask us to send samples; you'll like them

### Detroit Stamping

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#### Company Detroit, Mich.

Drill-Press Production at the Lowest Cost

Illustration shows
6º Jig with 11/4º
Extension Base



for
DRILLING
TAPPING
MILLING
REAMING
GRINDING
CENTERING, Etc.

Here is a production tool that will reduce your tooling costs. Standard "V" jaws and interchangeable jaws keep the jigs in constant operation so they will handle practically any production job. Reduces loading time, maintains accuracy and gives plenty of chip room. Outlasts the average drill press. Made in three sizes.

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# Don't Call a Gang of Men



away from their work to do the lifting and lugging of heavy pieces, when one man and a

#### Canton Portable Crane and Truck

can do it more quickly, more efficiently and with greater safety. The Canton is made in six sizes to hoist, truck and place any load up to 6,000 lbs. in weight. Can be equipped now with the safety friction brake.

It will pay you to investigate Write today for Booklet E-8

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New York Office: Carnegle Hall, 154 West 57th Street

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# Difficult Riveting Job



We have solved the riveting problem for many manufacturers, who thought hand riveting was their only way out, until they investigated the "GRANT," which does their work better and at much less cost.

#### "GRANT" Noiseless Spinning Riveters

cover all classes of work, including awkward pieces and riveting in outof-the-way places.

Send samples of your work for riveting and cost estimate

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# BOX FEE ELECTRIC HOIST



AND
ECONOMICAL
HOIST BUILT

ALL STEEL SUSPENSION 92 % MECHANICAL

**EFFICIENCY** 



2000 lb.

# BOX TYPE HEAD CRANE

ROOM
LIFTS ITS LOAD WITHIN 18 IN. OF CEILING

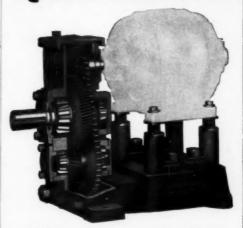
HEAVY DUTY ELECTRIC AND HAND TRAVELING CRANES MADE IN EVERY SIZE AND TYPE FOR EVERY DUTY

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Made in sizes for motors from 1/8 to 15 H. P. Ratio 2.5 to 1 to 1014 to 1. Timken Roller Bearings and Helical Gears all moving parts operate in a bath of oil.

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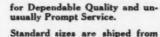
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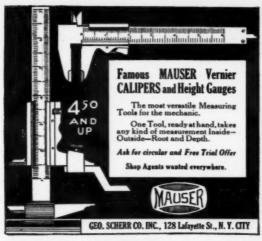
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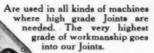
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U. S. Electrical Tool Co., Cincinnati, Ohio
Vim Electric Tool Co., 149 Broadway, N. T.,
Winterhoff Tool & Machine Co., Elibart, Ind.

Drilling Machines, Post
Buffalo Forge Co., Buffalo, N. Y.
Hammond Mfg. Co., Cleveland, Oblo.
Standard Electrical Tool Co., Cincinnati, O.
U. S. Electrical Tool Co., Cincinnati, Oblo.

Drilling Machines, Radial Hammond Mfg. Co., Cleveland, Oblo. Standard Electrical Tool Co., Cincinnati, O. Taylor & Fonn Co., Hartford, Conn. Western Mcho. Tuel Works, Holland, Mich.

Drilling Machines, Sensitive Avey Drilling Machine Co., Cincinnati Burke Machine Tool Co., Conneaut, Ohlo Foote-Burt Co., Cleveland, O. Leiand-Gifford Co., Wercester, Mass. Algourney Tool Co., Hartford, Comn. Taylor & Fenn Co., Hartford, Comn.

Drilling Machines, Vertical
Aver Drilling Machine Co., Cincinnatil
Feota-Rurt Co., Cleveland, O. Mans.
Sigounes, Tool Co., Hartford, Conn.
Sigounes, Tool Co., Hartford, Conn.
Varlor & Fenn Co., Ruttford, Conn.
U. S. Siectrical Tool Co., Cincinnati, O, the

Drills, Right Angle U. S. Electrical Tool Co., Cincinnati, Ohio

Drills, Taper Reamer Bolledeur & Son Co., A. C., New London, Conn.

Drills, Twist Cleveland Twist Drill Co., Cleveland, Oblo. Drive Screws

Electrical Instruments

Ellinois Testing Laboratories, Inc., 150 W. Austin Ave., Chicago Emery Wheel Dressers and Cutters Taylor & Fenn Co., Hartford, Com., Western Tool & Mig. Co., Springfield, O.

End Mills Temkins-Johnson Co., Jackson, Mich.

Engravers, Mechanical and Hand Schwerdtle Stamp Co., Bridgeport, Com. U.S. Electrical Tool Co., Cincinnati, Obio

Experimental Work

American Tool Works, Inc., Hartford, Conn.

Filing Machines

Wardwell Mfg. Co., Cleveland, O. Fixture Locks Slewek Tool Co., Detroit, Mich.

Sewes Tool Co., Detroit, mins,
Flexible Shaft Machinery
Keller Mech. Eng. Corp., SSA Washington
St., Brooklyn, N. Y.
Mall Tool Co., 7730 S. Chrage Av., Chicage
U. S. Electrical Tool Co., Cincinnati, Ohio

Forges Buffalo Forge Co., Buffalo, N. Y.

Forgings, Hollow Bored American Hollow Boring Co., Brie, Pa.

Furniture, Machine Shop Western Tool & Mfg. Co., Springfield, O. Gages, Dial

Ames Co., B. C., Waitham, Mass. Standard Gage Co., Poughkeepsie, N. Y.

Gages, Pin, Plug, Ring and Snap American Tool Works, Inc., Hartford, Coan. Standard Gage Co., Poughkeepsie, N. Y. Gages, Special Standard Gage Co., Poughkeepsis, N. Y.

Gages, Spline Cotonial Broach Co., Inc., Detroit, Mich.

Gauges, Taper Hartford Special Mohy. Co., Hartford, Conn.

Gear Cutters Chicago Gear Works, 700-773 W. Jackson Blvd., Chicago

Gear Hobbers Barber Coiman Co., Bockford, III. Scherr Co., Geo., 128 Lafayette, New York

Gears
Beston Gear Works Sales Company, Norfolk
Downs, Mass.
Chicago Gear Works, 769-773 W. Jackson
Grofont Gear Corp., C. E., So. Kauton, Mass.
James Mfg. Co., D. O., 1130 W. Mon.
Different
Massachusetts Gear & T. Co., Websurn, Mass.

Gears, Herringbene Crefcot Gear Corp., C.E., So Easton, Mass. James Mfg. Co., D. O., 1130 W. Monroe St., Chicago

Gears, Rawhide, Bakelite, Fabroil Chicago Gear Works, 769-773 W. Jackson Crofoot Gear Corp., C.E., So. Easton, Mass. James Mfg. Co., D. O., 1139 W. Mource St., Chicago

Grinders, Air Madison-Kipp Corporation, Madison, Wis.

Grinding Machines, Angle Plate Standard Electrical Tool Co., Cincinnati, O. U. S. Electrical Tool Co., Cincinnati, Obio

Grinding Machines, Belt Gallmoyer & Livingston Co., Grand Rapids, Peerless Surfacing Machine Co., Treys, N., Porter-Cable-Hutchinson Corp., Syrac. New York Walls Sales Corp., 98 Warren St., New York

Grinding Machines, Bench Gallmeyer & Livingston Co., Grand Rapids, Mich. Hammond Michy. Bullders, Inc., Ealannasco., Standard Electrical Tool Co., Cincinnal, O., Stoody Company, Whittier, Call. U. S. Electrical Tool Co., Cincinnati, O.

Grinding Mchs., Combination Buffer Hammond Mchy. Builders, Inc., Kalamasoo, Standard Electrical Tool Co., Cincinnati, O., Standy Company, Whittier, Calif. U. S. Electrical Tool Co., Cincinnati, Ohio

Grinding Machines, Cylindrical Jarechi Mohe, & T. Co., Grand Rapide, Mich Thempson Grinder Co., Springfield, Ohio

Grinding Machines, Die

Jaracki Mehe. & T. Co., Grand Rapida, Mich Thompson Grinder Co., Springfield, Ohio U. S. Electrical Tool Co., Cincinnati, Obio

Grinding Machines, Disc Bay State Tool & Machine Co., Springfield Gallmeyer & Livingston Co., Grand Rapids Hammond Mehy. Buildars, Inc., Kalamasoo Porter Cable-Hutchinson Corp., Syracu Standard Electrical Tool Co., Cincinneti, O. U. S. Electrical Tool Co., Cincinneti, Ohio Winterhoff Tool & Mche. Co., Elkhart, Ind.

Grinding Machines, Drill Bay State Tool & Machine Co., Springfield, Gallmeyer & Livingston Co., Grand Rapids. Hammond Mohy. Builders, Inc., Kalamazoo.
Mich.
U. S. Electrical Tool Co., Cincinnati, O.

Grinding Machines, External Standard Electrical Tool Co., Cincinnati, O. U. S. Electrical Tool Co., Cincinnati, Obio

Grinding Machines, Face Taylor & Fenn Co., Hartford, Conn.

Grinding Machines, Floor Bay State Tool & Machine Co., Springfield, Mass. Bammond Mehy. Builders, Inc., Kalamazoe Standard Electrical Tool Co., Cincinnati, O. U. S, Electrical Tool Co., Cincinnati, O.

Grinding Machines, Flexible Shaft Bay State Tool & Machine Co., Springfield, Mass. Keller Mch. Eng. Corp., 58A Washington St. Brooklyn, N. Y Stoody Company, Whittier, Callf. U. S. Electrical Tool Co., Cincinnati, Obio

Grinding Machines, Hob Scherr Co., Geo., 128 Lafayette, New York

Grinding Machines, Internal Mail Tool Co., 8389 S. Chicage Ave., Cha National Machine Tool Co., Racine, Wis. Palmer-Edwards Co., Flint, Mich. Taylor & Fenn Co., Hartford, Conn. Thompson Grinder Co., Springfield, Ohis U. S. Electrical Tool Co., Cincinnati, O.

Grinding Machines, Center Electric Standard Electrical Tool Co., Cincinnati, O. J. S. Electrical Tool Co., Cincinnati, Ohio

Grinding Machines, Lathe Electric Standard Electrical Tool Co., Cincinnati, O. U. S. Electrical Tool Co., Cincinnati, Oble

Grinding Mackinss, Portable Electric Grinding Mackinss, Portable Electric Cincinnati Elactrical Tool Co. Cincinnati, O. Keller Meck. Eng. Co., SAA Washington, Mail Tool Co., 7780 S. Brookins, N. Y. National Machine Tool Co., Bactre, Wing. National Machine Tool Co., Bactre, Wing. Forter-Cable-Hutchinson Corp., Brzeume, N. Y. Standard Electrical Tool Co., Cincinnati, O. Stoody Company, Whittler, Calif. math. Strand Co., N. & Soul N. Lincoln St., Chige U. S. Electrical Tool Co., Uncinnati, O. Vim Electric Tool Co., 169 Broadway, N. Y. Winterhoff Tool & Sche. Co., Elshart, Ind. Grinding Machines, Snagging Gallmeyer & Livingston Co., Grand Rapid Mis

Jarecki Mche. & T. Co., Grand Hapida, Mich. Standard Electrical Tool Co., Cincinesti, O. U. S. Electrical Tool Co., Cincinesti, O.

Grinding Machines, Surface Bay State Tool & Machine Co., Springfield, Mass. Gallmeyer & Livingston Co., Grand Rapida Mich. Standard Electrical Tool Co., Cincinnati, O Stevens Inc., John B., 306 Hudson Street New York Thompson Grinder Co., Springfield, Obio U. S. Electrical Tool Co., Cincinnati, Obio

Grinding Machines, Tap
Bay State Tool & Machine Co., Springfield,
Mass. Gailmoyer & Livingston Co., Grand Rapids

Grinding Machines, Tool Bay State Tool & Machine Co., Springfield Mana Hammond Mchy. Builders, Inc., Kalamason Mich Standard Electrical Toe Co., Cincinnati, O., Surfacer Mfg. Co., 2454 irving Park Bivd., Chicago Taylor & Fenn Co., Hartford, Conn. U. S. Electrical Tool Co., Cincinnati, Ohlo

Grinding Machines, Tool Post Standard Electrical Tool Co., Cincinnati, O. U. S. Electrical Tool Co., Cincinnati, Obje

Grinding Machines, Universal Gallmeyer & Livingston Co., Grand Rapids Mich Surfacer Mfg. Co., 2454 Irving Park Sivd , Chicago Thompson Grinder Co., Springfield, Ohlo

Grinding Machines, Vertical Spindle Standard Electrical Tool Co., Cincinnati, C U. S. Electrical Tool Co., Cincinnati, Onlo

Hack Saw Blades Armstrong-Bium Mfg. Co., 241 N. Francisco Ave., Chicago Pasrissa Machine Co., Racine, Wis.

Hack Saw Machines Armstrong-Blum Mfg. Co., 841 N. Francisco Av., Chicago Poerioso Machine Co., Bacine, Wis.

Heists, Electric Box Crans & Hoist Corp., Philadelphia, Pa. Browning & Co., Inc., Victor R., Gleveland, Ohio

Hoists, Portable Canton Foundry & Machine Co., Canton, Oblo Hagen, H. J., 109 Lafayette St., New York

Hollow Mills Wilder Tool Co., Greenfield, Mass.

Hose Couplings Hunt & Son, C. B., Salam, Oblo

Index Centers, Single and Multi Spdl. gtevens Inc., John B., 306 Hudson Street, New York

Indicators, Dial Standard Gage Co., Poughkespele, N. T.

Jigs and Fixtures American Tool Works, Inc., Hartford, Conn Bay State Tool & Machine Co., Springfield, Mass

Elco Tool & Screw Corp., Rockford, Hannifin Mfg. Co., 621 S. Kolmar Av., Chgo. Hartford Special Mchy. Co., Hartford, Cono. Heuser Mfg. Co., 1638 N. Paulina St., Chgo. Siewek Tool Co., Detroit, Mich.

Keyseating Machines Davis Keyseater Co., Rechester, N. Y.

Lag Screws co Tool & Screw Corp., Bockford, III. Kico

Lathe Drives Culiman Wheel Co., 1310 Altgeld St., Chge.

Lathes, Automatic Townsend Mfg. Co., H. P., Hartford, Conn.

Lather, Bench
Ames Co., B. C., Waitham, Mass.
Hardinge Brethers, Inc., 1770 Berteau Ave.,
Chicago Rocky Mountain Steel Products Inc., Los Angeles, Calif.

Lathes, Engine Hardinge Brothers, Inc., 1770 Bertana Ave Hardings Brethers, Inc., 1770 Hertsman, A.
La Blend Mch. Tool Co., R. K., Cincinnati, O.
Monarch Machine Tool Co., Sidney, O.
Porter-Cable-Hutchinson Corp., Syracuse,
N. Y. Rahn-Larmen Co., Cincinnati, Ohio Rocky Mountain Steel Products Inc., Les Springfield Machine Tool Co., Springfield, O.

Lathes, Extension Bed Gap Lettlend Mch. Tool Co., R. K., Cincinnati, O. Rahn-Larmon Co., Cincinnati, O.

Lathes, Gap Lettlend Mch. Tool Co., R.K., Cincinnati, O. Lathes, Hand Stevens Inc., John B., 306 Hudson Street, New York

Lathes, Hydraulic Automatic Monarch Machine Tool Co., Sidney, Ohlo

Lather, Manufacturing
Lettlend Mch. Tool Co., R. K., Cincinnati, O.
Monarch Machine Tool Co., Sidney, Oble
Sundstrand Machine Tool Co., Rockford, Ill.

Lather, Polishing and Buffing Hammood Mchy, Bullders, Inc., Kalamasoo, Mich.

Lather, Precision LeBlond Mch. Tool Co., R.K., Cincinnati, O. Monarch Machine Tool Co., Sidney, (Ihia Wade Tool Co., Waltham, Mass.

Lathes, Short Bed
Porter-Cable-Hutchinson Corp., Syracuse,
N. Y.
Rocky Mountain Steel Products, Inc., Los
Angeles, Calif.

Lathes, Tool Room
La B ond Meh. Tool Co., R.K., Cincinnati, O.
Monarch Machine Tool Co., Sidney, Ohle

Lathes, Turret Monarch Machine Tool Co., Sidney, O.

Lathes, Wood Turning Delta specialty Co., Milweskee, Wis. Lubricator, Automatic Norgran Co., Carl, A., Danver, Colo.

Lubricators, Engine Madinon-Kipp Corporation, Madison, Wis. Lubricators, Machine Tool Madison-Kipp Corporation, Madison, Wis.

Mandrels, Expanding Hannifin Mfg. Co., 621 S. Kolmar Av., Chgo. Nicholoon & Co., W. H., Wilkes-Barre, Pa. Western Tool & Mfg. Co., Springfield, O.

Machine Screws Eleo Tool & Seraw Corp., Bockford, Ill.

Mandrels, Solid Nicholson & Co., W. H., Wilkes-Barre, Pa.

Millers, Beach Bardinge Brothers, Inc., 1770 Bertage Ave . Chicago

Millers, Tilted Rotary and Offset Oesteriein Muchine Co., Cincinnati, Obio

Milling Altachments
Burke Machine Toel Co., Conneaut, Ohlo
Kearner & Trecker Corp., Milwaskee, Wis.
Leftlend Meh. Tool Co., S. E., Chlennati, O.
Porter-Cable-Hutchinson Corp., Syracuse,
N. Y. Stevens Inc., John B., 806 Hudson Street, New York Taylor & Fenn Co., Bartford, Conn.

Making Machines, Etnch mes Co., S. C., Waltham, Mass. surke Machine Tool Co., Comeant, Oble sundstrand Machine Tool Co., Reckford, Bl.

Milling Machines, Hand Burks Machine Tool Co., Conneaut, Oblo Sundstrand Machine Tool Co., Beckford, III, Superior Machine & Eng. Co., Datroit, Mich.

Milling Machines, Manufacturing Kearney & Trecker Corp., Milwaukee, Wia

Milling Machines, Plain Burke Machine Tool Co., Conneaut, Ohio Kearney & Trecker Corp., Milwankee, Wis, Lettlend Mch Teel Co., R.K., Cincinnati, O., Sundatrand Machine Tool Co., Rockford, Ill.

Milling Machines, Portable Pedrick Tool & Machine Co., Philadelphia

Milling Machines, Spline Taylor & Fenn Co., Hartford, Conn.

Milling Machines, Universal Kearney & Trecker Corp., Milwankes, Wis. Leftlond Mch. Tool Co., E.K., Cincinnati, O.

Milling Machines, Vertica I Kearney & Trecker Corp., Milwankes, Wis. LeBlood Mch. Tool Co., R.K., Cincinnati, O. Taylor & Fenn Co., Hartford, Conn.

Mills, Adjustable Hollow Genouse Mfg. Co., Inc., Rochastar, N. Y.

Name Pintes, Etched and Stamped Schwerdtie Stamp Co., Bridgeport, Coap.

Nut Seiters, Electric Standard Electrical Tool Co., Cincinnati, O. U. S. Electrical Tool Co., Cincinnati, O. Vim Electric Tool Co., 149 Broadway, N. Y.

Nuts, Machine Screw Eleo Tool & Screw Corp., Rockford, Ill.

Pins, Leader And Dowel Baumbach Mfg. Co., E. A., 1812 So. Kilbourne Ave., Chicago

Pipe Bending Machines Pedrisk Tool & Machine Co., Philadelphia

Pipe Cutters Ridge Tool Co., Elyria, Ohlo

Pipe Plugs, Square Head and Slotted Elco Tool & Screw Corp., Rockford, Ill.

Pipe Vises Ridge Tool Co., Elyria, Ohio

Pipe Wrenches Ridge Tool Co., Riyria, Ohio

Planers, Valve Seat, Portable Pedrick Tool & Machine Co., Philadelphie

Polishing and Buffing Machines
Cincinnati Electrical Tool Co., Cincinnati, O.,
Excessor Tool & Mch. Co., E. St. Louis, Ill.
Hammond Mchy. Builders, Inc., Ealanstans,
Mill. Tool Co., 1780 S. Chicago Ave., Mill.
Standard Electrical Tool Co., Gincinnati, O.
U. S. Electrical Tool Co., Cincinnati, O.

Standard Electrical Tool Co., Cincinnati, G. U. S. Electrical Tool Co., Cincinnati, O. Presses, Air Hannifin Mig. Co., 621 S. Kolmar Av., Chgo.

Presses, Arber Atlas Franc Co., Kalamasoe, Mich. Hartlett, Edwin E., Nashua, N. H. Nicholson & Co., W. H., Wilkes Harre Pa Sheldon Machine Co., ESS Cottage Grove Ave., Chicago Wilson, R. K., Buffalo, N. Y.

Presses, Breaching Bartlett, Edwin E., Nashua, N. H.

Presses, Foot Taylor & Fenn Co., Hartford, Conn.

Presses, Power Headley & Whittemers Co., Heleit, Wis.

Presses, Punch Lewthwalto Mcho.Co., T.H., 811B. 67th., N.Y.

Presses, Screw Jarocki Mche. & T. Co., Grand Rapids, Mich.

Pulley Machinery Aver Drilling Machine Co., Cincinnati

Profiling Machines Wade Tool Co., Waltham, Mass. Pulleys, Iron, Solid and Split Conway Clutch Co., Cincinnati, O.

Pulleys-V Deita Specialty Co., Milwaukee, Wis.

Pumps, Coolant Roper Corporation, Geo. D., Rockford, Ill. Temkino-Johnson Co., Jackson, Mich.

Pumps, Lubricant Buthman Machinery Co., Cincinnati, O.

Punch Press Feeds Wittek Mfg. Co., 4309 W. 24th Place, Chgo.

Punch, Shear and Bender, Hand Armstrong-Bum Mfg. Co., 841 N. Francisco Ave., Chicago

Punches, Hand Armstrong-Blum Mfg. Co., 341 N. Francisco Buffalo Forgo Co., Boffalo, N. Av., Chicago Buffalo Forgo Co., Boffalo, N. Bertt, Wis. Hender & Whitzenove Co., Ed. B. 311 E. 47th, Lewthwalts Mche. Co., T. H., 311 E. 47th, Whitney Matal Tool Co., Backford, III.

Punches, Power

Punches and Dies Hendley & Whittemore Co., Belait, Wis. Lewthwaite Mche.Co., T.H., 811E. 47th., H.Y.

Punches and Shears Excelsior Teol & Mch. Co., E. St. Louis, III. Hagen, H. J., 100 Lafayette St., New York

Pyrometers Illinois Testing Laboratories, Inc., 150 W. Austin Ave., Chicage

Reamer Holders Nicholasn & Co., W. H., Wilhesburre, Pa.

Reamers, Adjustable Cleveland Twist Drill Co., Cleveland, Ohio. Schellenbach Hunt Tool Co., Cincinnati, U.

Reamers, Portable Electric Standard Electrical Tool Co., Cincinnati, O. U. S. Electrical Tool Co., Cincinnati, Oblo

Riveters, Multiple Spindle Grant Mfg. & Mche. Co., Bridgeport, Conn.

Riveters, Pneumatic Grant Mfg. & Mehe. Co., Bridgeport, Cosm.

Riveting Machines Buffalo, N. Y. Grant Mfg. & Miche, Co., Bridgeport, Conn. Townson Mfg. Co., H. P., Hartford, Conn.

Red Cutters Armstrong-Blum Mfg. Co., 341 N. Francisco Hendley & Whittsmore Co., Beinkt, Wis Lewithwalte Mebo. Co., T. H., 311 E. 47th, N. Y.

Rotary Tables, Hand Feed Stevens Inc., John B., 806 Hudsen Street, New York

Saw Sharpening Machines Porter Mchy. Co., J. E., Muskegen, Mich. Schorr Co., Goo., 142 Liberty St., New York Wardwell Mfg. Co., Cleveland, O.

Saws, Electric Hand Delta Specialty Co., Milwaukes, Wis. Porter-Cabis-Hutchinson Cerp., Syract U. S. Electrical Tool Co., Cineinanti, O.

Scraping Machines, Hand & Pasumatic Anderson Brothers Mfg. Co., Rockford, R.

Screw Drivers, Electric tandard Electrical Tool Co., Cincinnati, O., J. 8. Bioctrical Tool Co., Cincinnati, Ohlo im Electric Tool Co., 149 Broadway, N. Y.

Screw Driving Machines, Automatic Reynolds Machine Co., Massillon, Ohle

Screw Machine Products National Acme Co., Cleveland, Ohio.

Screw Machines, Automatic National Acme Co., Cleveland, Ohio. Townsend Mfg. Co., H. P., Hartford, Coms.

Screws, Cap, Drive, Lag, Mch. & Wood Blee Tool & Screw Corp., Bockford, Ild.

Set-Up Appliances Houser Mfg. Co., 1638 N. Paulina St., Chgo. Standard Shop Equip. Co., Philadelphia, Pa.

Shaft Hangers and Boxes Delta Specialty Co., Milwankee, Wis,

Shafts, Flezible Eoller Mech. Eng. Corp., 88A Washington St. Brooklyn, N. Y. Mall Tool Co., 7720 S. Chicago Ave., Chgo. Strand Co., N. A., 8001 N. Lincoln St., Chge. U. S. Electrical Tool Co., Checimati, Ohlo

Shafts, Stee I American Hellow Boring Co., Hele. Ps. Delta Specialty Co., Milwaukes, Wis.

Shaping Machines
Osborne & Saxton Machy, Co., Columbus, O.
Smith & Milla Co., Cincinnati
Springfield Machine Tool Co., Springfield, O.
Western Mche. Tool Works, Holland, Misb.

Shears, Alligator Canton Foundry & Machine Co., Canton, O.

Shears, Hand Armatrong-Blum Mfg. Co. 941 N. Francisco Buffelo Forgo Co., Buffelo, N. Av., Chicago Buffelo Forgo Co., Buffelo, N. Berdier & Whittensore Co., Beieft, Wis. Lewthwaite Machine Co., T. H., 31 E. 47th Whitney Metal Tool Co., Beckford, Ill.

Shears, Slitting National Machine Tool Co., Racine, Wis.

Shears, Power
Ruffalo Forge Co., Buffalo, N. Y.
Hendley & Whittemers Co., Heielt, W
Libert Machine Co., Green Bay, Wis.

Shop Accessories, Home Work Delta Specialty Co., Milwaukee, Wis.

Slotting Machines, Screw Head Stevens Inc., John 808 Hudson Street, Hew York

Spacing Washers sping Co., Dutreit, Mich.

Special Tools and Machinery American Tool Works, Inc., Hartford, Cone. Miller & Crowningshield, Greenfield, Mass. Ruperlor Machine & Eng. Co., Detroit, Mich. Wade Tool Co., Waltham, Mass.

Speed Reducers, Worm, Spur and Harringbone Co., Nerfolk Booton Gear Works Sales Co., Nerfolk Chicago Gear Works, 769-773 W. Jackson Bird, Chirago Cullman Wheel Co., 1390 Misseld St. t hys. James Mig Co., D.O., 1300 W. Monree St., Chicago Chicago Chirago Chirago Chicago Chirago Chirago

Spring Taper Sleeves Scherr Co., Geo., 144 Liberty St., New York

Sprockets Sprockets
Chiongo Gear Works, 789-773 W. Jackson
Bisd., Chicago
Cullman Wheel Co., 1850 Aitgeld St., Chgo.
Massachusetts Gear & T. Co., Woburs, Mass.

Stamps, Steel and Rubber Schwerdtie Stamp Co., Bridgeport, Conn.

Stencils, Brass and Oil Board Schwardtie Stamp Co., Bridgeport, Conn.

Straightening Machines Springfield Machine Tool Co., Springfield, O., Whitney Meta | Too Co., Reckford, Ill.

Stud Setters Precunier Safety Chunk Co., 14 S. Clinton St., Chicago

Tap Extractors alton Co., Hartford, Conn.

Tap Holders Procunier Safety Chuck Co., 14 S. Clinton St., Chicago

Tapper, Hand Bay State Tool & Mch. Co., Springfield, Mass.

Tapping Machines and Attachments
Avey liviling Stachine Co., Cincinnati
Burke Stachine Tool Co., Connectut, Ohio
Burke Stachine Tool Co., Connectut, Ohio
Button Table St. Co.,
Ave., Brooklyn, N. Y.
Bannarod Mig. Co., Cleresiand, Ohio
Laland Gifford Co., Worcester, Mac.
Chinton
Procumer States Ohios Co., St., Chicaco
M., Chicaco
M., Chicaco
Western Mche. Tool Works, Holland, Mich.
Whitters Betal Tool Co., Red Ford, Ill.

Tape, Cellapsing atlonal Acme Co., Cleveland, Ohio

Turead Millers Scherr Co., Geo., 128 Lafayette, New York Threading Machines, Automatic, Stud Grant Mfg. & Mche. Co., Bridgeport, Ennn.

Threading Tools
Armstrong Bree. Tool Co., 308 N. Francisco
Av., Chicago

Tool Heads, Universal Precision Tool Co., Bridgeport, Cenn.

Tool Holders Armstrong Bros. Tool Co., 208 N. Francisco Av., Chicago Western Tool & Mfg. Co., Springfield, O. Wilder Tool Co., Greenfield, Mans.

Tools, Boring Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago

Tools, Lathe and Planer Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago

Tools, Machinists' Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago

Tools, Spot Facing Genesee Mfg. Co., Inc., Rochester, N. Y.

**Tube Flanging Machines** 

Grant Mfg. & Mcho. Co., Bridgeport, Conn. Turntables

Canton Foundry & Machine Co., Canton, O.

Universal Joints American Tool Works, Inc., Hartford, Conn. Sington Gear Works Sales Company, Norfolk Downs, Mass.

Used and Rebuilt Machinery

American Tool Works Co., Cincinnati, Ohio Automatic Machine & Engineering Co., Inc., Detroit, Mich. Bellefleur & Son Co., A. C., New London, Belleteur & Son Co., A. G., Rew & London.
Bennett Machinery Co., 30 Church
Naw York, N. Y.
Blesser Mig. Co., J., Speringrido, ill.
Brandes Machinery Co., Gleveland, Ohlo
Brandes Machinery Co., Gleveland, Ohlo
Broodway Machinery Co., 21 Contre 81,
Brown Machinery Co., 21 Contre 81,
Brown Machinery Co., 21 Contre 81,
Brown Machinery Co., Gleveland, N. Y.
Brownell Machinery Co., Gleveland, Ohlo
Davis Machinery Exchange, Tolodo, O.
Donahue Steel Products Co., 74th and
Eastern Machinery Co., Bl. (61 Washington
Eastern Machinery Co., E. L., 65 Washington
Eastern Machinery Co., E. L., 65 Washington Foster Machinery Co., E. L., 551 Washington Blyd., Chicage Hess. Schenck Co., Cleveland, Ohio Hill, Clarke & Co., 649 W. Washington

Hean-Schenck Co., Cleveland, Ohio-Hill, Clark & Co., 649 Washington Hill, Clark & Co., 649 Washington Hill, Clark & Co., 649 Washington Hyman & Bens, Jeseph, Philadelphia, Pealer Hyman & Hong, Bully Co., Indian-lacing Machinery Co., D., 2018, Ind. International Machinery Co., D., 2018, Ind. International Machinery Co., Win. C., Jones Machiner Tool Co., Cincinnati, Ohio Kinsey Lo., E. A., Chelnnati, O., Machiner Co., E., Chelmati, O., 2018, Ind. Lucas & Son. Bridgeport, Comp. Lucas & Son. Bridgeport, Comp. Mich. Mich. Mich. Machiner Tool. & Supply Company, Midwest Equipment Co., 624 W. Lake St., Chicago, U. Lake St., Chica

Midwest Equipment Co., 624 W. Lake St., Chicago, III. Miles Machinery Co., Saginaw, W. S., Mich. Molitor Mehy. Co., Ches., 138 S. Chiton, Chicago Moray and Co., Inc. 408 Brooms St. Chicken Moray and Co., Inc. 408 Brooms St. Chicken Norton-Rosadway Meby. Co., Clucknast, O. O'Srien Machinery Co., Flinded-phis Osborne & Sexton Machy. Co., Columbus, O. Palmer-Edwards Co., Filth, Mich. Palmer-Edwards Co., Filth, Mich. Resue-Fritts Co., 558 W. Washington, Che-Reilance Meby, Sales Co., Pittsburgh, Pa. Riverside Machinery Depot., Detroit, Mich. Rousell Machine Co., Fittsburgh, Pa. Rousell Machine Co., Fittsburgh, Pa. Checken, Checken, Checken, Checken, Checken, Checken, Chicken, Chicken,

Chicago Segal Co., Herbert "Action", Newark, N. Seifreat-Elstad Machinery Co., Dayton, O.

Used and Rebuilt Machinery-Cout.

Severin Machinery Corp., 30 Church St., New York Simmons Machine Tool Corp., Albany, N.Y. State Michy, Co., Inc., New Haven, Conn. Simmons Machine Tool Corp., Albany, N.Y State Mchy, Co., Inc., New Haves, Con., Stochr Mchy, Co., A. M., 106 So., Jeffernor State mony, vo., a. M., 106 So, Jefferson Stock Melny, Co., A. M., 106 So, Jefferson Strafer Machinery Co., Jersey City, N. J. Streinger Co., Chas. A., Detroit, Mich. Strong, Carliele & Hammond Co., Cleveland Sorptiss Material & Mohy. C., Detroit, Mich. Strong, Carliele & Mohy. C., Detroit, Mich. Strong, Carliele & Mohy. C., Detroit, Mich. United Mehy. & Supply Co., St, Louis. Wache-Gregg & Co., 117 N. Jefferson St., Vacaland, G.

Wattnam. Mchy. Co., M. A., Cleveland, O. West Fenn Machinery Co., Pittsburgh, Pa. White Machy. Co., A. D., 108 N. Jefferson St., Chicago

Wigglesworth Mchy. Co., Boston, Mass. Winterer, Herman L., Philadelphia, Pa.

Vises, Air Control Hannifig Mfg. Co., 621 S. Kolmer Av., Chgo.

Vises, Air Operated

Hannifin Mfg. Co., 621 S. Kolmar Av., Chgo. Tomkins-Johnson Co., Jackson, Mich.

Vises, Drilling Machine Armstrong-Blum Mfg. Co., 841 N. Francisco Av., Chicago Armstrong Bres. Tool Co., 308 N. Francisco Armstrong Bres. Tool Co., 308 N. Francisco Av. Chicago Bay State Tool & Machine Co., Springfield, 

Vises, Machinists' vives, macamists
Bay State Tool & Mch. Co., Springfield, Mase,
Miller & Crowningshield, Greenfield, Mass,
Planket Mch. E. J. S. N. Ask, Chgo,
Sheldon Machine Co., 2355 Cottage Grove
Wash Co., 21 So., Clark St., Chicago
Wastern Tool & Mfg. Co., Springfield, O.

Vises, Milling Machine Hagen, H. J. 109 Lafayette St., Hew Yesh Hartford Special Michy Co., Hartford, Cons. Heuser Mr., Co., 1838 N. Paulina St., Chgo. Miller & Growningshield, Greenfield, Mass. Plunket Mch. Co., J. E., 216 N. Ada, Chgo. Sbeldon Machine Co., 3235 Cottage Grove Ave., Chleago Sheldon Macnine Co., Ave., Chicago Stevens Inc., John B., 306 Hudson Street, New York

Vises, Shaper Plunket Mche. Co., J. E., 215 N. Ada, Chgo. Sheldon Machine Co., 2003 Cettage Grove Superior Tool & Die Co., Milwaukee, Win,

Welders, Butt, Spot and Seam Lenney Mche. & Mfg. Co., Warren, Obio

Wood Screws Elco Tool & Screw Corp., Reckford, Ill.

**Wood Working Machinery** Hendley & Whittemore Co., Beloit, Wis. Forter-Cable-Hutchinson Corp., Syracuse, N. Y.

Worms
Chicago Gear Works, 760-773 W. Jackson Blvd., Chicago Manuschusette Gear & T. Co., Weburn, Mas

# "X-L" Adjustable Inserted Spiral Blade Shell and **Machine Reamer**



Reamers made with Left Hand Angle Cutting Blades do not dig in, and all chatter is eliminated. This means free, clean cutting, smooth holes, and increased production. The range of expansion is

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Speed Steel cal flutes cut fast and Blades. clean. Made only in high Made with speed steel.

# All Sizes Carried in Stock

straight and tapered shanks.

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# Used and Rebuilt Machinery Section

Lists of Used and Rebuilt Machinery, either For Sale, Wanted, or For Exchange, set in uniform style, will be published in the Classified Section at the rate of 60 cents a line across the page, each issue, plus \$3.00 for name and address. Minimum charge, \$6.00. No display permitted.

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Balancing mch., Gishelt precision, Baling press, scrap metal, belt dr. Bullard 8" Multaumatic, like new. Drill, No. 216 Becker heavy duty. Pipe mche., Saunders cap. 4" to 12".

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Polishing machine, Centerless, 3". Rolls, 4'x\u00e3" & 8"x\u00e3/16" pyr. type. Saw, No. 3\u00e3 Ryerson friction. Shears, 52"x\u00e41 ga. & 10'x\u00e40 ga. Slitter, Yoder 3\u00e3", 16 ga., m. d.

### FOR SALE BY

# General Machinery Corporation,

Drill, Sibley 24" sl. hd., b. g., p. f.
Drill, Myers 14" rd. and sq. tables.
Grinder, Landis 6x18 plain, c. s.
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Miller, Becker, No. 7H (Lincoln).

# 140 Federal St., Boston, Mass.

Miller, Hendey No. 8 (Lincoln). Press, Niagara No. 2 flywheel. Shaper, Hendey 15" friction. Shaper, Potter & Johnston 15" univ. Shear, Bliss No. 105 rotary.

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### . 1900 Euclid Bldg. Cleveland. Ohio Brandes Machinery Co.,

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Planer, 30"x12' Gray, 2 heads.
Planer, 30"x10' Ohio, 2 heads.
Press, No. 9 Cleve, inclin., 44" str.
Shear, 272 Peck & Wilcox. Welder, 35 k. v. a. Gibbs.

## FOR SALE BY

	<ul> <li>3 Fox St., Bridgeport, Conn.</li> </ul>			
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24" Bullard vert, new era m.d. \$1950.	No. 1 Barnes swivel hd. (2) ea.\$ 150.			
24" Bullard vert, r. p. rebuilt, 1650.	2" Rockford horizontal fine 675.			
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2#" Fitchburg horizontal good 375.	4" Binsee horizontal 750.			
22" Warner & S. horiz good 275.	4" Detrick & Harvey 3000.			
DRI				
No. 12 P. & W. mult. fine (2) \$ 675.	4' Hammond tapping \$ 450.			
No. 13 P. & W. mult. fine 750.	3' Dreses radial, m. d 375.			
No. 11 Natco 8-spindles (3) 475.	3' Gang radial 475.			
No. 1 Bausch mult, arr. 8 eq. 6 750.	3t' American radial, m. d 850.			
No.2 Bausch mult, arr. 16 eq. 6 850.	4' 6" Bickford radial 475.			
Gardam p. f. mult. eq. 6 spdls. 475.	5' Prentice, old 475.			
Natco 6-spindle heavy 325.	Leland-Gifford sensitive floor 125.			
Langelier sensitive (3) cach 65.	20" Barnes 2-spindle 250.			
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25" Snyder, like new	20" Barnes 4-spindle (2) 300.			
28" Hamilton b. g. fair 200.	224" Barnes 3-spindle, heavy 725.			
28" Hamilton b. g. fair 200.				
42" Prentice b. g. power feed. 300.	24" H. & W. 7-spindle, sens 400.			
3' Carlton radial 250.				
DIEING M				
10 ton Henry & Wright, old \$ 450.	50 ton Henry & W., like new \$3000.			
25 ton Henry & Wright, good 1250.	50 ton H. & W., good shape 1500.			
GRIN	DERS.			
No.4 Gardner 24" disc & press \$ 300.	No. 1 Morse 6"x18" plain (4). \$ 150.			
No. 14 Gardner double b. b 575.	6"x18" Landis cyl. rebuilt 650.			
26" Rowbottom m. d. pattern. 375.	No. 11 B. & S. plain (2) each. 475.			
No. 15 Realy single 275	No. 10 B. & S. plain			
No. 7 Gardner 30", b. b 759.	No. 16 B. & S. 72" cylinder 675.			
No. 2 B. & S. surface, chuck. 390.	12"x36" Landis self contained. 875. 10"x72" Norton, fine 950.			
No. 2 Binsee, swivel chuck 350.	10"x72" Norton, fine 950.			
2-I B.& S.univ.90% new,no eq. 1375.	12" P. & W. plain bearing 875.			
No.1W &M.tool&cut., likenew 575.	12" P. & W. plain bearing 875, 14" P. & W. b. b			
No. 1 Brown & Sharpe rebuilt 525.	26" Blanchard m. d. latest type.			
No. 2 B. & S. rebuilt, fine 850.	60 Heald cylindrical (4) \$275. to 600.			
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18"x50" Norton, auto parts 1250.				
to the Morton, auto parts 1200.				
Cautarians Haim 2 wheel (2) 2500	No. 70 Heald int. m. d. clutch 775.			
Centerless Heim 2 wheel (2) 2500,	Centerless Sanford 2 wheel 1650.			
Centerless Heim 2 wheel (2) 2500, I GEAR CI	Centerless Sanford 2 wheel 1650.			
GEAR CU 4" Waltham	Centerless Sanford 2 wheel 1650. JTTERS. No. 4 B. & S. spur, rebuilt 750.			
Centerless Heim 2 wheel (2) 2500, I GEAR CI 4" Waltham	Centerless Sanford 2 wheel 1650. JTTERS. No. 4 B. & S. spur, rebuilt			
Centerless Heim 2 wheel (2). 2500. GKAR CI 4" Waltham	Centerless Sanford 2 wheel 1650. JTTERS. No. 4 B. & S. spur, rebuilt			
Centerless Heim 2 wheel (2). 2800. 4" Waltham	Centerless Sanford 2 wheel			
Centerless Heim 2 wheel (2). 2500. GKAR CI 4" Waltham	Centerless Sanford 2 wheel			
Centerless Heim 2 wheel (2). 2500. 4 " Waltham, bevel (4). 300. No. 1 Bilton, automatic 200. 25 Bilton, automatic 325. HAM 800 lb. Standard automatic \$1350.	Centerless Sanford 2 wheel 1659. TTERS. No. 4 B. & S. spur, rebuilt \$ 750. No. 12 B C. gear hobber 1125. No. 624 Fellows, m. d 950. Gimlet pointer, # Nat'l 475. 1ERS. 300 lb. Bliss board \$ 325.			
Centerless Heim 2 wheel (2). 2500. 4 " Waltham, bevel (4). 300. No. 1 Bilton, automatic 200. 25 Bilton, automatic 325. HAM 800 lb. Standard automatic \$1350.	Centerless Sanford 2 wheel 1650. TTTERS. No. 4 B. & S. spur, rebuilt \$ 750. No. 12 B C gear hobber 1125. No. 624 Fellows. m. d 950. Gimlet pointer, \$ Nat'l 475. 1ERS.			
Centerless Heim 2 wheel (2). 2500, 1 4" Waltham	Centerless Sanford 2 wheel 1659. TTERS. No. 4 B. & S. spur, rebuilt \$ 750. No. 12 B C. gear hobber 1125. No. 624 Fellows, m. d 950. Gimlet pointer, # Nat'l 475. 1ERS. 300 lb. Bliss board \$ 325.			
Centerless Heim 2 wheel (2). 2500. 4  "Waltham, bevel (4). 300. 300. No. 1 Bilton, automatic 200. 4  Bilton, automatic 325. HAM  800 lb. Standard automatic#1350. 800 lb. Standard pl. 6 poppets. 850. 800 lb. Chambersburg board. 1275.	Centerless Sanford 2 wheel 1659. TTTERS. No. 4 B. & S. spur, rebuilt \$ 750. No. 12 B C. gear hobber 1125. No. 624 Fellows, m. d 950. Gimlet pointer, \$ Nat'l 475. IERS. 300 lb. Bliss board (2) 215. 1200 lb. Bliss board (2) 215. 1200 lb. Bliss board drop.cheap.			
Centerless Heim 2 wheel (2). 2500, 1 4" Waltham, bevel (4) 300, 3" Waltham, bevel (4) 300, No 1 Bilton, automatic 250, 2‡ Bilton, automatic 41250, 800 lb. Standard pl. 6 poppets. 850, 800 lb. Chambersburg board, 1275, 800 lb. Chambersburg board, 1275, 400 lb. Bilss board 550,	Centerless Sanford 2 wheel 1650. JTTERS. No. 4 B. & S. spur, rebuilt \$ 750. No. 12 B C. gear hobber 1125. No. 624 Fellows. m. d 959. Gimlet pointer, § Nat'l 475. IERS 300 lb. Bliss board \$ 325. 100 lb. Bliss board (2) 215. 1200 lb. Bliss board drop.cheap. Minor & Peck litters (3).			
Centerless Heim 2 wheel (2). 2500. 4" Waltham, bevel (4). 300. No. 1 Bilton, automatic 200. 25 Bilton, automatic 325. HAM 800 lb. Standard automatic	Centerless Sanford 2 wheel 1659. TTERS. No. 4 B. & S. spur, rebuilt \$ 750. No. 12 B C. gear hobber 1125. No. 624 Fellows, m. d 950. Gimlet pointer, \$ Nat'l 475. 1ERS. 300 lb. Bliss board (2) 215. 100 lb. Bliss board (2) 215. 1200 lb. Bliss board drop.cheap. Minor & Peck lifters (3). 8 Radley 200 lb. Upright 650.			
Centerless Heim 2 wheel (2). 2500.  4" Waltham. bevel (4). 300.  No 1 Bilton, automatic. 320.  2‡ Bilton, automatic. 325.  800 lb. Standard automatic. 41350.  800 lb. Standard pl. 6 poppeta. 850.  800 lb. Chambersburg board. 1275.  800 lb. Chambersburg board. 1275.  Bradley 60" helve (2). 150.  HEAR	Centerless Sanford 2 wheel 1650. JTTERS. No. 4 B. & S. spur, rebuilt \$ 750. No. 21 B C. gear hobber 1125. No. 624 Fellows, m. d 950. Gimlet pointer, § Nat'l 475. IERS 300 lb. Bliss board (2) 215. 1200 lb. Bliss board (2) 215. 1200 lb. Bliss board drop.cheap. Minor & Peck litters (3). Bradley 200 lb. upright 650. ERS.			
Centerless Heim 2 wheel (2). 2500. 4  "Waltham, bevel (4). 300. 300. No. 1 Bilton, automatic 200. 25 Bilton, automatic 325. HAM 800 lb. Standard automatic#1350. 800 lb. Standard automatic#1350. 800 lb. Chambersburg board. 1275. 400 lb. Bliss board 550. Bradley 60" helve (2). 150. HEAL No. 0 Waterbury F. d. s. s. d. 8 750.	Centerless Sanford 2 wheel 1659. TTERS. No. 4 B. & S. spur, rebuilt \$ 750. No. 12 B C. gear hobber 1125. No. 624 Fellows, m. d 950. Gimlet pointer, 1 Nat'l 475. 18 RS. 300 lb. Bliss board (2) 215. 100 lb. Bliss board (2) 215. 1200 lb. Bliss board drop.cheap. Minor & Peck lifters (2). Rradley 200 lb. upright 650. ERS. 38* Waterbury F. d. s. s. d. (2). \$1950.			
Centerless Heim 2 wheel (2). 2500.  4" Waltham. bevel (4). 300.  No 1 Bilton, automatic. 320.  2† Bilton, automatic. 325.  800 lb. Standard automatic. 41350.  800 lb. Standard pl. 6 poppeta. 850.  800 lb. Chambersburg board. 1275.  800 lb. Chambersburg board. 1275.  Bradley 60" helive (2). 150.  No. 0 Waterbury F. d. s. s. d. & 750.  No. 1 Waterbury F. d. s. s. d. & 750.  No. 1 Waterbury F. d. s. s. d. 2 755.	Centerless Sanford 2 wheel			
Centerless Heim 2 wheel (2). 2500.  4" Waltham, bevel (4). 300.  No. 1 Bilton, automatic 300.  800 lb. Standard automatic. #1350.  800 lb. Standard automatic. #1350.  800 lb. Standard pl. 6 poppets. 850.  800 lb. Chambersburg board. 1275.  400 lb. Bliss board. 550.  Bradley 60" helve (2). 150.  HEAL  No. 0 Waterbury F. d. s. s. d. 8 750.  No. 1 Waterbury F. d. s. s. d. (2). 1450.  2 Waterbury F. d. s. s. d. (2). 1450.	Centerless Sanford 2 wheel 1659. TTERS. No. 4 B. & S. spur, rebuilt \$ 750. No. 12 B C. gear hobber 1125. No. 624 Fellows, m. d 950. Gimlet pointer, § Nat'l 475. 18.RS. 300 lb. Bliss board (2) 215. 1200 lb. Bliss board (2) 215. 1200 lb. Bliss board drop.cheap. Minor & Peck lifters (3). 8 radiey 200 lb. upright 650. ERS. 38 Waterbury F. d. s. s. d. (2). \$1950. No. 0 Waterbury F. s. s. o. d. 475. No. 0 Manyille s. s. o. d. 475.			
Centerless Heim 2 wheel (2). 2500. 4" Waltham. bevel (4). 300. 300. No. 1 Bilton, automatic 250. 4" Bilton, automatic 325. HAM 800 lb. Standard automatic	Centerless Sanford 2 wheel 1659. TTERS. No. 4 B. & S. spur, rebuilt \$ 750. No. 12 B C gear hobber 1125. No. 624 Fellows, m. d 950. Gimlet pointer, § Nat'l 475. ERS. 300 lb. Bliss board (2) 215. 1200 lb. Bliss board (2) 215. 1200 lb. Bliss board drop.cheap. Minor & Feck litters (3). Bradley 200 lb. upright 650. ERS. 3§ Waterbury F. d. s. s. d. (2). \$1950. No. 0 Waterbury F. s. s. o. d. 475. No. 0 Manville s. s. o. d. 475. No. 0 Manville s. s. o. d. (3). 475.			
Centerless Heim 2 wheel (2). 2500.  4" Waltham, bevel (4). 300.  No. 1 Bilton, automatic 300.  125 Bilton, automatic 325.  HAMN  800 lb. Standard automatic	Centerless Sanford 2 wheel 1659. TTERS. No. 4 B. & S. spur, rebuilt \$ 750. No. 12 B C. gear hobber 1125. No. 624 Fellows, m. d 950. Gimlet pointer, \$ Nat'l 475. 18 RS. 300 lb. Bliss board (2) 215. 1200 lb. Bliss board (42) 215. 1200 lb. Bliss board (70, cheap. Minor & Peck lifters (3). Rradley 200 lb. upright 650. ERS. 3* Waterbury F. d. s. s. d. (2). \$1950. No. 0 Waterbury F. s. s. o. d 475. No. 0 Manville s. s. s. d. (3) 450. 458.			
Centerless Heim 2 wheel (2). 2590. 4  "Waltham, bevel (4). 300. No. 1 Bilton, automatic 320. 10. 10. 10. 10. 10. 10. 10. 10. 10. 1	Centerless Sanford 2 wheel			
Centerless Heim 2 wheel (2). 2500.  4" Waltham, bevel (4). 300.  No. 1 Bilton, automatic. 300.  No. 1 Bilton, automatic. 325.  HAM.  800 lb. Standard automatic	Centerless Sanford 2 wheel 1659. TTERS. No. 4 B. & S. spur, rebuilt \$ 750. No. 12 B C. gear hobber 1125. No. 624 Fellows, m. d 950. Gimlet pointer, \$ Nat'l. 475. 18 R.S. 100 lb. Bliss board (2) 215. 100 lb. Bliss board (2) 215. 1200 lb. Bliss board (2) 650. ERS. S. 97 Waterbury F. d. s. s. d. (2). \$1950. No. 0 Waterbury F. s. s. o. d. 475. No. 0 Manville s. s. s. c. d. (3) 450. 1ES. 24 "12" Reed J. c. g \$ 250.			
Centerless Heim 2 wheel (2). 2500. 4  "Waltham, bevel (4). 300. No. 1 Bilton, automatic 320. No. 1 Bilton, automatic 325. HAM  800 lb. Standard automatic. 81359. 800 lb. Standard automatic 1275. 400 lb. Standard 200 lb. Chambersburg board. 1275. 400 lb. Biliss board. 550. Bradley 60° helve (2). 150. HEAL  No. 0 Waterbury F. d. s. s. d. 9. 750. No. 1 Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1550. 1470. 1470. 15	Centerless Sanford 2 wheel 1659. TTERS. No. 4 B. & S. spur, rebuilt \$ 750. No. 12 B C. gear hobber 1125. No. 624 Fellows, m. d 950. Gimlet pointer, \$ Nat'l. 475. 18 R.S. 100 lb. Bliss board (2) 215. 100 lb. Bliss board (2) 215. 1200 lb. Bliss board (2) 650. ERS. S. 97 Waterbury F. d. s. s. d. (2). \$1950. No. 0 Waterbury F. s. s. o. d. 475. No. 0 Manville s. s. s. c. d. (3) 450. 1ES. 24 "12" Reed J. c. g \$ 250.			
Centerless Heim 2 wheel (2). 2500. 4  "Waltham, bevel (4). 300. No. 1 Bilton, automatic 320. No. 1 Bilton, automatic 325. HAM  800 lb. Standard automatic. 81359. 800 lb. Standard automatic 1275. 400 lb. Standard 200 lb. Chambersburg board. 1275. 400 lb. Biliss board. 550. Bradley 60° helve (2). 150. HEAL  No. 0 Waterbury F. d. s. s. d. 9. 750. No. 1 Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1450. 3' Waterbury F. d. s. s. d. (2). 1550. 1470. 1470. 15	Centerless Sanford 2 wheel 1650. TTERS. No. 4 B. & S. spur, rebuilt \$ 750. No. 12 B C. gear hobber 1125. No. 624 Fellows, m. d 950. Gimlet pointer, § Nat'l 475. 18 RS. 100 lb. Bliss board (2) 215. 100 lb. Bliss board (2) 215. 1200 lb. Bliss board (4) 215. 1200 lb. Bliss board drop.cheap. Minor & Peck lifters (2). Rradley 200 lb. upright 650. ERS. 3* Waterbury F. d. s. s. d. (2). \$1950. No. 0 Waterbury F. s. s. o. d 475. No. 0 Manville s. s. s. d. (3) 450. FS. 24**218* No. 0 Manville s. s. s. d. (3) 450. FS. 24**218* No. West Haven 625. 28**118* N. B. P 625			
Centerleas Heim 2 wheel (2). 2500. 4  "Waltham, bevel (4). 300. No. 1 Bilton, automatic 320. No. 1 Bilton, automatic 325. HAM  800 lb. Standard automatic. 81359. 800 lb. Standard automatic 41359. 800 lb. Standard pt. 6 poppeta. 850. 800 lb. Chambersburg board. 1275. 400 lb. Biliss board. 550. Bradley 60° helve (2). 130. HEAT  No. 1 Waterbury F. d. s. s. d. 4.8 750. No. 1 Waterbury F. d. s. s. d. (2). 1450. 3" Waterbury F. d. s. s. d. (2). 1450. 3" Waterbury F. d. s. s. d. (2). 1450. 3" Waterbury F. d. s. s. d. (2). 1450. 3" Waterbury F. d. s. s. d. (2). 1650. 1478. 4" Hendey (2). 575. 16" xid "Hendey (3). 675. 16" xid "Hendey (4). 755. 16" xid "Hendey yoke. 850. 16" xid "Hendey yoke. 850	Centerless Sanford 2 wheel 1659. TTTERS. No. 4 B. & S. spur, rebuilt \$ 750. No. 12 B C. gear hobber 1125. No. 624 Fellows, m. d 950. Gimlet pointer, \$ Nat'l 475. 162 No. 624 Fellows, m. d 950. Gimlet pointer, \$ Nat'l 475. 162 No. 624 Fellows, m. d 950. 162 No. 1			
Centerless Heim 2 wheel (2). 2500.  4" Waltham. Sevel (4). 300.  No. 1 Bilton, automatic 300.  800 lb. Standard automatic. 41350.  800 lb. Standard automatic. 41350.  800 lb. Standard automatic. 550.  Bradley 60" helve (2). 150.  HEAL  No. 0 Waterbury F. d. s. s. d. 8 750.  No. 1 Waterbury F. d. s. s. d. (2). 1450.  "Waterbury F. d. s. s. d. (2). 1550.	Centerless Sanford 2 wheel 1659. TTTERS. No. 4 B. & S. spur, rebuilt \$ 750. No. 12 B C. gear hobber 1125. No. 624 Fellows, m. d 950. Gimlet pointer, \$ Nat'l 475. 162 No. 624 Fellows, m. d 950. Gimlet pointer, \$ Nat'l 475. 162 No. 624 Fellows, m. d 950. 162 No. 1			
Centerleas Heim 2 wheel (2). 2500. 4  "Waltham, bevel (4). 300. No. 1 Bilton, automatic 320. No. 1 Bilton, automatic 325. HAM  800 lb. Standard automatic. 81359. 800 lb. Standard automatic 41359. 800 lb. Standard pt. 6 poppeta. 850. 800 lb. Chambersburg board. 1275. 400 lb. Biliss board. 550. Bradley 60° helve (2). 130. HEAT  No. 1 Waterbury F. d. s. s. d. 4.8 750. No. 1 Waterbury F. d. s. s. d. (2). 1450. 3" Waterbury F. d. s. s. d. (2). 1450. 3" Waterbury F. d. s. s. d. (2). 1450. 3" Waterbury F. d. s. s. d. (2). 1450. 3" Waterbury F. d. s. s. d. (2). 1650. 1478. 4" Hendey (2). 575. 16" xid "Hendey (3). 675. 16" xid "Hendey (4). 755. 16" xid "Hendey yoke. 850. 16" xid "Hendey yoke. 850	Centerless Sanford 2 wheel 1650. TTERS. No. 4 B. & S. spur, rebuilt \$ 750. No. 12 B C. gear hobber 1125. No. 624 Fellows, m. d 950. Gimlet pointer, § Nat'l 475. 18 RS. 100 lb. Bliss board (2) 215. 100 lb. Bliss board (2) 215. 1200 lb. Bliss board (4) 215. 1200 lb. Bliss board drop.cheap. Minor & Peck lifters (2). Rradley 200 lb. upright 650. ERS. 3* Waterbury F. d. s. s. d. (2). \$1950. No. 0 Waterbury F. s. s. o. d 475. No. 0 Manville s. s. s. d. (3) 450. FS. 24**218* No. 0 Manville s. s. s. d. (3) 450. FS. 24**218* No. West Haven 625. 28**118* N. B. P 625			

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J. L. Lucas & Jon, Inc. Drie	igeport, Conn.—Continued.
MILLING	MACHINES
No. 3 Cincinnati univ. s. p. d. \$2250.	No. 28 Ohio, rebuilt
No. 1 Cinn. univ. complete 775.	No. 2 Rockford vertical 750.
No. 3A B. & S. univ. s. p. d 1950.	No. 2 Cincinnati h. p. s. p. d 1450.
No. 3 B. & S. univ. old cone 800.	No. 1 Hendey, rebuilt 475.
No. 8 D. & S. univ. old Cone. 800.	Mr. 1 D 9 C - I - COS
No. 24 Ohio univ. complete 750.	No. 1 B. & S. plain
No. 0 B. & S. univ. complete 275.	No. 2Y B. & S. slot. nose 575.
No. 2 Hendey univ. complete. 850.	10" Pratt Whitney mfg. (3) 500.
No. 4 Cinn. univ. old type 1450.	12" Pratt Whitney, mfg. hvy 650.
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No. 2 Cincinnati b. g 625.	Briggs A. & B. mfg.
PLAN	ERS.
30"x8' Cincinnati heavy \$ 550.	22"x5' Gray (2)
36"x10' Cincinnati 4 heads 1450.	24"x6' Whitcomb 675.
40"-90" utof Com & boods 250	24 X8 W IIICOHD 810.
48"x36"x10' Gray, 2 heads 750. 72"x42"x12' Cinn. 4 heads 1950.	32×12′ Gray m. d 1750.
72 X42 X12 Cinn. 4 neads 1950.	48"x12' Whitcomb 850.
16"X3" P. & W	
PRES	
EGF52 Ferracute 150 ton coin-	4 Bliss b.g. Styles pattern. \$ 500.
ing, k. j	68N Bliss d. a. rebuilt str 575.
ing, k. j	69N Bliss d. a. rebuilt 625.
coining. k. j 1375.	68C Bliss d. a., d. crank, each. 200.
Waterbury 150 ton 11 stroke(2) 1850.	No 5 Bliss d a toggle 3000
EG5 Ferracute s. s. (2) 700.	No. 5 Bliss d. a. toggle 3000. No. 20 Bliss, o. b. rebuilt 300.
No. 52 Waterbury F.dial s.s.(4) 475.	No. 5 Farrel Foundry o. b 250.
No. 40 Manuille a a (0)	
No. 40 Manville s. s. (2) 350.	
4A Standard rebuilt s. s. (2) 325.	No. 8 Farrel Foundry o. b. pl. 675.
5A Standard rebuilt s. s 525.	10-Farrel o b.dial var.strokes 200.
51, 52 and 73 Bliss s. s.	6-Farrel o. b. with roll feeds., 190,
5 plunger Waterbury Farrel 875.	Perkins geared trimming shear 775.
202 S Bliss 6 plunger 1450.	5D Standard 475.
Perkins geared trimming 650.	Hydraulic 250-400 and 600 ton
No. 4 Bliss h. g. Styles pat 450	Foot presses pendulum(10) ea. 15.
31x5 (2) each 8 150.	MILLS
91-5 (9) each 8 150 1	10"x16" B. & G. fine rebuilt \$1250.
6"-10" M G C L L C 770	10 XIS B. & G. line reduit \$1200.
6 A12 M. & G. U. D. Hill (15 ]	Several spoon and jewelers rolls.
SAV	
No. 89 Millers new (8) each \$ 35.	No. 1 Racine high speed\$ 110.
Peerless 6" univ. m. d 250.	30" White metal band 100.
SCREW MACHINE	S-AUTOMATICS
Davenport 5-spindle (3) each. \$ 750.	New Britain 24-33-34-54 1x5-
Cincinnati 5-spindle 50 collets. 750.	18x7 (2).
Clevelands # #-12 A	Brown & S. 00-(20) 0 (12) 2-(5).
Gridleys 9/16-#G-14-24-2# F	B. & S. 00 high sud. t. f. (13) ea. \$ 525.
Nat'l Acmes 515-52-53-54 & 55	Gridley 9/16, #G, rebuilt 975.
SHAP	
14" Smith & Mills \$ 275. 1	20" Hendey late crank 1250.
16" Stockbridge b.g 400.	24" Queen City b. g 950.
16" G. & E. rebuilt 550.	
SLOT	repe
No 6 Waterham P comm (2) 6 278	No. 2 Waterbury F. (6) each 8 475.
No. 0 Waterbury F. screw (3).8 378.	No. 2 Waterbury P. (6) Cacil. P 416.
No. I Manville (2) 250.	Straightener 12 r. Newbolt 36" 675.
TURRET	LATHES.
Steinle late 6 hole \$1350.	2"x26" P. & W. turret, new \$1250.
No. I P. & W. hand (3) each 175. I	No. 4 W. & S. univ, rebuilt (6) 1250. No. 4 W. & S. b. g. plain (2) 475.
1B Foster univ. rebuilt 975.	No. 4 W. & S. b. g. plain (2) 475.
No. 3 B. & O. wire feed 300.	No. 6 p. f. t. & c. s. rebuilt 875.
8 B. & O. p. f. t. w. f. rebuilt 800.	No 1 W & S rebuilt 175
No 64 Potter & Lohnston	No. 1 W. & S. rebuilt
2" of I offer & Johnston 450.	10% I ibbs model A
2 X24 J. & L. good condition 675.	18" Libby model A 2000.
No. 6A Potter & Johnston 450. 2"x24" J. & L. good condition 675. 3"x36" J. & L. geared feed 450.	24" Gisholt d. c., m. d 500.

# J. L. Lucas & Son. Inc. Bridgeport, Conn.-Continued.

TUMBLING	BARRELS.
No. 2 Baird	24"x30" Henderson (2)
WIRE FO	ORMERS.
No. 1 B. & J. like new \$ 475.	No. 3 Manville \$ 775.
No. 4 Baird 1450.	Double end chamfering 325.
No. 4 Nilson (2) 1250.	- Burre
WOODW	
Sander 30" Berlin 8 675.	Swing saw, American 75.
Sander 14" belt, horizontal 400.	Swing saw, Rogers 35.
Shaper (2) No. 1 single & dbl.	
	ANEOUS.
Bolt cutter, 2-sp. National 4". \$ 575.	Separator, No. 2 Amer. m. d \$ 225.
Compressor, 8"x8" Ingersoll-R. 275.	Shear, No. 536 Stollgap, #"cap. 750.
Compressor, 10"x10" Bury hor. 478.	Shear, R. & K. circular 42" 375.
Compr., 12"x12" Curtis duplex 575.	Shear, No. 4 L. & A.cutting-off 375.
Chucking machines, 454 New	Slitter, Lamp & Nash 36" gang 375.
Britain (6), special price.	Slitter. Adriance 26" gang 200.
Eyelet machines, 4-No. 04's;	Swedger, No. 5 Langilier 475.
2-No. 104's.	Threader. " Nat'l, 2 hds., fine 575.
Furnace, No. 152 Rockwell rot. 1250.	Thread roller, " Manville (3) 300.
Pipe machine, 3" Curtis 175.	Thread roller, No. 30 WF.,
Profiler, No. 14 P. & W 175.	rebuilt800.
Riveters, 80B Grant pedestal,	Thread roller, No. 20 WF.,
3/16, (3), each	7/16 hopper 500.
Riveters, 81A Grant bench (2) 75.	Upsetter, 11" National stop
Riveters, 120 Grant & cap. (4)ea. 140.	motion, wedge grip 1450.

# FOR SALE BY

# Strafer Machinery Company, Jersey City, N. J. 14th and Provost St.,

BORING MILLS
100" Sellers s. p. d. rapid traverse.   72" Sellers rapid traverse, m. d.
96" Cincinnati s. p. d rapid traverse.   51" NBP. single pulley drive.
84" Bullard belt drive. 24" Bullard side head.
GEAR CUTTERS
No. 6 Cincinnati 60"x20" m. d.   No. 5A. Lees-Bradner a. c., m. d.
GRINDERS.
16"x52" Landis self-contained.   6"x32" Norton, overhead counter.
16"x48" Landis crankshaft. No 8 Badger disc, 30" wheel.
KEYSEATERS.
No. 5 Mitts & Merrill belt drive.   No. 4 Mitts & Merrill extra equipt.
LATURE

LAT	HRS.
84"x40' Putnam modern.	1 24"x18' Prentice g. h.
42"x50' Pond cone type.	30"x16' Rahn-Larmon g. h., m. d.
60"x21' Pond, t, g.	42"x14' Bridgeford geared head.
40"x22' Prentice, blocks and chucks.	24"x12' Lodge & Shipley.
42"-70"x16' Fay & Scott slide gap.	16"x10' P. & W. geared head, t. a.
49" +96' Nilso t or balt drive	91" Gisholt torrest lathe

	PLANERS.
48"x48"x16' Pond 4 heads, b. d.	30"x30"x14' Whitcomb, 2-heads.
36" D. & H. open side 1-head.	30"x30"x6' Powell I-head,
	PRESSES.

400 ton W. S. hydraulic 73"x20".	No. 42 Bliss double crank, 32".
Hydraulic vertical 38"x43", 75 ton.	Ferracute s. r. g. 103 geared.
No. 2 Bliss double crank.	No 87 Zeh & Hahneman grd. arch.
No. 34 Bliss double crank, 44".	S-134 Ferracute 82" bet, uprights.
MISCELI	ANEOUS.

MISCELL	
Beading machine, Bliss,	Compressor, C.P.T. Co. 5 "x5" vert.
Boring bars, portable, 4"x8'.	Drill, Rockford right angle horis,
Caterpillar ditcher, B. & G. 24"x8'.	Lithes, Oliver pattern, slide gap.
Chuck jaws set for boring mill.	Pipe machine, 6" Saunders with dies.
Compressor, IR. 8"x6" horiz. m.d.	Wire straightener, core, to 5/16".

### FOR SALE BY

### Marr-Galbreath Machinery Co.,

Air comp., 4‡"x4‡" & 6"x6" Curtis. Air comp., 12x10" Ing-Rand ER1, 355 cu. ft. motor drive. Bender & straight'r, cap. 12" beams. Blower, No. 7 Sturt. 12" outlet. Blower, No. 40 Connersville. Blowers, No. 4v Connersville.
Blowers, Root No. 4, 500 c. p. m.
Blowers & exh., 6.8, 9 & 1s" opening.
Bolt cutter, 1" Wells Bros., m. d.
Bolt cutter, 1" Landis, dbl. hd. (l. s.)
Bolt cutter, 2" Acme, single head.
Boring mill, 4" Maxi type, 2-hds.,

Boring mill, 54" Maxi type, 2-hds., a. c. motor drive. Boring mill, 30" King; and Bullard. Boring mill, 22" bar W. & S. horiz. Brake or press, 10' Keene toggle

capacity 16 gauge. Brake, 6' No. 161 Chicago for 16 ga. Brake, 8'x12 ga. power, Chicago. Brakes, hand, 6', 10', for 18 ga. Broaching mch., No.3 La P. Hudson. Bulldozer, No. 2 W.-W., fric. clutch. Bulldoser, No. 2 W.-W., Iric. Clutch, Chuck, Heald magnetic 142x40".
Chuck, Walker magnetic, 6" diam. Cold header, §" W.F., solid die. Cold saws, Nos. 118 and 12 Higley. Crimping roll, 68 Robinson, 16 ga. Drill, radial, 5 Western, g.b., m. d. Drill, sensitive radial, 3 Amer. La. Driller, Detroit 5-spindle semi-auto., Folders, bench 30" hand (4). Forging mach., 14" Ajax, steel bed. Forging mche., 3" Ajax, steel bed. Forging mche., 3" Acme steel bed. Furnace, rotary annealing, 12"x8'. Furnaces, oil tempering, 10"x10"x10" Gear and pinion cutter, No. 3 Sloan. Grinder, No. 14 Landis universal, Grinder, No. 14 Lasalle surface. Grinder, 18-D. Rowbottom, o.h.b.b. Hack saw, 6x6" Marvel, motordrive. Hack saw, 6x6" Marvel, motor drive. Hack saw, 6x6", 12", 12" Racine. Hack saw, Peerless, 6" univ. shaping Hammer, 2-B. Nazel, belt drive. Ham, 250 lb. L. Giant belt pwr.new. Ham, 400 lb. No.10 Beaud., pwr. b.d. Hammer, 800 lb. Erie stm. forg., 5.f. Hammer, 1000 lb. Chbg., steam drop. Haisto, chib. Los 8, org. capacity. Hoists, chain, 1 to 8-tons capacity. Keyseaters, No. 00 & No. 2 Baker. Keyway cutter. 24" Morton, cap. 23". Lathe, 14"x6' Hendey q. c. g., pan,

t. a., chuck. belt drive by motor. Lathe, 15"x6' South Bend, chuck. Lathe, 13"x7' S. Bend, p.c.g.ck., c/s. Lathe, 16"x6' S. Bend, p.c.g.ck. & c/s. Lathe, 18"x8 S. Bend, 2 CRS. & C/s. Lathe, 18"x8' L. & S. sel. hd. m.d.t.a. Lathe, 21"x8' LeBlond, q. c. g., d. b. g., 14" h. s., chuck. Lathe, 16"x10' Prentice, g.h, q. c.g.,

14" h. s. t. a., chuck.
Lathe, 20"x10' Hendey, belted m. d.
Lathe, 26"x12' 10" Wickes, semiq. c. g.; h. s., chuck, c/s.

58 Water St., Pittsburgh, Pa. Lathe, 38"x18', s. b. g., chuck, dbl.

Lattle, 39 x15, 8. 0. g., chuck, dul. friction pulley c/s.
Miller, vertical, No. 3 Becker, cone,
Miller, pl. No. 9 B. & S., 18x6x15".
Miller, No. 20 Ohio pl. auto. feeds.
Miller, No. 14 Knight, hir rt. viseciski
Milling machine, No. 3 LeBlond

milling machine, No. 3 LeBiona pl. 34kily28", b.g., cone drive. Milling machine, No. 5-B Becker vert, g. b for con. sp., m. d. Motors, h. 2. 5, 7\frac{1}{2}, h. p. 3/69/220 v. Motor, 5 h. p. 500 v. d. c., 1500 rev. Motor, 10 h. p. a. c., 3/69/220/1740. Motor, 30 h. p. 230 v. d. c., 550/1605 rev. Motor, 25 h p. slip rg., 3/60/220/1160. Pipe mch., 6" Jar'ki pump, pip. dies, Planer, 24"x24"x6' Gray, 1-head, Planer, 39"x10' W. & P., 2-heads, Press, No. 3A Bliss, adj. table. Press, F-162 Ferracute, foot power. Presses, Nos.3&4 Bliss, punch type. Presses, O.b.i., No. 1 Toledo.
Pr., o.b.i. No. 1 VKV; No. 1 Sidney.
Press, o.b.i. No. 3 Niagara, 14" str.
Press, C-3 Ferracute, o.b.i., plain. Presses, foot, No. 87 Bliss, pendulum. Press, No. 6 Perkins, s. s., 4000 lbs. Presses, No. 87 Niagara, screw. Press, s. s. 86" bet. hgs, 7400 lbs; roller feed motor drive

Punch, s. e., Badger, 7" thrt., #"x#". Punch, s. e., Badger, 8" thrt., #"x#". Punch, s.e., Buffalo 30" thrt., #x#"cap. Punch, No. 13 Niagara hand power, 10" tht; wt. 140 lbs.

Punch, Rapid, 20" tht., 1"x‡", m. d. Punch & shear, s.e., 36" & 48" thrt., ‡"x‡", m. d. Punch & stake riveter, No. 123-C.

Toledo hoilermakers Riveter, Grant No. 101, \$/16" cap., for motor drive

Riveters, 1-AA, 3-A, 51-B, hi. speed. Screw machine. No. 0G B. & S.

Screw machine. No. 0G B. & S. automatic, belted motor drive, Shaper, 7" Rhodes, vert. ram. m. d. Shaper, 18" Hendey, friction, vice.c/s. Shaper, 20" & 16". Cin., b. g., crank. Shaper, 24" & M. b., g., crk., A.1. Shaper, 44" xi Niagara, 18" gap. Shears, 4" & g" Lennox, throattess, Shear, plate, 60" xi" L. & A. 7" ean art for motor drive. gap, arr. for motor drive.

Shear, rotary, 36" threat cap. 7, 32". Shear, rotary, 36" throat cap. 7, 32". Shear, rotary, 16 ga., Yoder, 24" thr. Shear, rotary, 18 ga., Yoder, 24" thr. Shear, squaring, 8"xl4 ga. Canton. Shear, 10 xl6 ga. Ohl power. Shear, aguaring, 80"xl4 ga. Canton. Shear, 10"xl6 ga. Ohl power. Shear, aguaring, 30"xl8 ga., F. & P. Slotter, 15" Dill, for motor drive. Spin. lathe, No. 8 Bliss, c.r., tailstock, Thread. mch., 4" Geometric, s.s. fl.st. Turret, No. 4 W. & S., g. l. h., w. f.

### FOR SALE BY

Midwest Equipment Co., Drill press, Avey sgl.-spdl., bench.

Drill press, Avey sgl.-spd., bench. Drill press, Allen b. b., 2-spindle. Drill press, Barnes 4-sp. camel back. Drill press, Barnes 4-sp. camel back. Drill press, Barnes 22°, back geared. Gear hobber, No. 2 Adans F. (2). Gear hobber, No. 3 Barber-Colman. Grinder, 8-s2 Norton cylindrical.

624 W. Lake St., Chicago, Ill.

Grinder, Badger 24" disc. b. b. Miller, Kempsmith No. 12 plain. Miller, Owen No. 3 pl. vert. head. Planer, Gray 24"x24"x6'.

Punch press, LaSalle No. 3, o. b. i. Threader, Williams I to 6", m. d. Welder, Wilson arc, 300 amp., m. d. Welder, Wilson arc, 150 amp., m. d. Small tools-electric drills-belting-motors-air compressors.

### FOR SALE BY

### Wm. C. Johnson & Sons Machinery Co. 1211-1223 N. 12th St., St. Louis, Mo.

BOLT THREADERS 2"

2" Landis double head. 2" Landis. 14" Landis. BORING MILLS.

No. 1 P. & H. boring and drilling 34" Gisholt turret lathe. machine. DRILLS

32" Prentice sliding head. 3' arm American, motor-driven. 5' arm Niles half-universal. I-spindle Avey. 14" Mason high speed. 2-spindle Allen

20" Champion. 2-spindle No. I Avey, ball bearing. 22" Barnes back geared. 3-spindle Avey. 8-spindle Bausch. 28" Barnes back geared.

GRINDERS Wells Bros. universal. 12"x60" Landis vertical.

No. 2 Walker universal. LATHES

14"x10' Lodge & Shipley, q. c. g. 24"x14' Whitcomb-Blaisdell, motor driven. 36"~48"x16' McCabe 2-spindle, hvy. 30"x15' Lodge & Shipley, q. c. g. 36"x18' Prentice.

14"x10" Lodge & Snipley, q. c. g. 16"xe' American geared bead, t. a. dr 20"x10" Bradford. 26"" 24""x12" LeBlond. 30"; 24"x12" Lodge & Shipley. 36"x 24"x12" Boye & Emmes, q. c. g. MILLERS. NS. NS.

No. 3 Brown & Sharpe universal. No. 1 U. S. hand No. 0 Burke bench. No. 2 Le Blond universal. No. 5-B Brown & Sharpe. No. 14 Kempsmith, plain. No. 3 Rockford hand

PIPE THREADING MACHINES. 1†" Landis. 2" Landis. 2" Bignall & Keeler. 6" Jarecki. 8" Williams.

PRESSES No. 1 Bliss toggle. No. 3 Toledo. No 24 Toledo cam drawing. No. 723 Toledo cam drawing.

Stiles & Parker drawing SCREW AND TURRET MACHINES. No. 2 Warner & Swasey hollowhex. | 2" Cleveland single spindle automatic

No. 3-A Warner & Swasey. screw machines. 3"x38" Jones & Lamso SHAPERS AND PLANERS. 16" Smith & Mills shaper. 32" Cincinnati shaper. 38"x36"x12' Cincinnati planer.

24" Milwaukee. MISCELLANEOUS. Hammer, 690-lb. steam. Punch, No. 14 W. W., 12" throat. Saw, No. 17 Higley cold. Bar shear, 5"x1". Hammer, 60 lb. Bradley helve.

Hammer, 250 lb. Little Giant. Hammer, 500 lb. Beaudry. Tapper, auto., Rickert & Schafer.

### FOR SALE BY

### West Penn Machinery Company

1208 House Building,

Automatic, No. o Brown & S. b. d. Automatics, 14" Fay. Air comp., 6"x6" Chicago, 31 cu. ft. Air comp., 6"x6" Chicago, 31 cu. ft. Air comp., 6"x6" Worth, 52 c. 1. m. d. Air comp., 8"x6" Bury, 129", 200-300. Air comp., 8"x6" Bury, 129", 200-300. Air comp., 6"x6" Bury, 129", 200-300. Air comp., 10"x10" Bury, 129", 200-300. Air comp., 16"x12" Ing. -R. E.R. 1, 526". Air comp., Nat'l. 705 c. f. 440-3-60 cy. Air comp., Nat'l. 705 c. f. 440-3-60 cy. Air comp., Worth, 1500 c. f. syn. m.d. Bolt cutter, 14" Landis, 3bd., m.d. flolt cutter, 2" Acme, belt drive. Bolt cutter, 2" Acme, belt drive. Bolt cutter, 3" National, b. d. Boring mill, 6"-16" Betts, 2hds. m. d. Boring mill, 6"-16" Betts, 2hds. m. d. Brake, 5" press type, 10 gauge.

Boring mill, floor type, 54° D. & H. Brake, 5' press type, 10 gauge. Brake, 6' hand. 16 gauge. Brake, 6' D. & K. 10 ga. box & pan, Brake, 10' Dreis & K. 10 ga. b. d. Brake, 10' Dreis & K. 3'16''. m. d. Bulldozers, Nos. 2, 4, 6, 28, 28 & 30. Dieing mches., 28 & 50 to H. & W. Drill, 21'' Rockford, tap. att. m. d. Drills, radial, 24', 34', 5' and 10'. Drill, radial, 24', 34', 5' and 10'. Drill, radial, 6' American universal. Filing mches. Oliver, 1 b. p. motor. Drill, radial, 6' American universal, Filing mche, Oliver, I b. p. motor, Flanger, McCabe, 4" capacity, dies. Gear cutters, 11", 24" & 36" Gleason, Gear cutter, \$12", 60 uld & Eberhardt, Gear hobber, 18" Gould & E. m. d. Gear hobber, 18" Gould & E. m. d. Gear hobber, 18" E. 18 Beale, and Grinders dies Nov. 17 & 18 Beale

Gear hobber, 18" Gould & E. m. d. Grinders, disc, Nos. 17 & 19 Besly. Grinder, rad., 14", 220 v. 3 ph. 60 cy. Grinder, surface, No. 16 Blanchard. Grinder, surface, 14" Arter. Grinder, tool & cut., No. 2 Walker. Hammer, blacksmith, power, 35-lbs. Hammer, 80-lb. Bradley, cush. helve. Hammer. 200-lb. Bradley, compact. Hammer, 500-lb. Beaudry, upright. Hammers, Nos. 3-B.4-B, 4-N Nazel. Hammers, NOS. 3-B. 4-B, 4-Ct. Nazet, Hammers, steam, 600 lb, to 6000 lb, Jacks, 25-ton Barrett, ball bearing, Lathe, 16"x6" So. Bend, chk., b. d. Lathe, 16"x6" Hendey q. c. g. Lathe, 20"x8" Hendey, the bar, t. a. Lathe, 24"x16" Bridgeford, grd. hd. Lathe, 46"x6" Bridgeford, grd. hd. Lathe, 6"x36" Bridgeford, g. hd. m.d. Lathe, 52"x34" Pittaburgh, m. d.

Lathe, turret, No. 8 Warner & S. Lathe, turret, No. 8 Warner & S. Lathe, turret, No. 8 W. & S. b. d. Lathe, turret, 24" Steinle, 64" hole. Lathe, turret, 24" Libby, 74" hole. Lysholm tables, 25" 30". Miller, duples, 24" Cincinnati auto. Miller, hand, United States 6"x24". Miller, plain, No. 3-A Milwaukee.

Miller, Ingersoll, 48"x48"x20' adj. rail. Miller, univ. No. 2-B Rock'd, b, d. Miller, vert. No. 5 Brown & Sharpe. Pipe mchs., 8" Oster, 2", 8" Williams.
Planer, 30"x30"x10' Woodward & P.
Planer, o. s., 36"x36"x16' D. & H.
Planer, rotary, 48" Niles, m. d.

Pittsburgh, Pa.

Presses, arbor, Nos. 7, 17 Greenerd. Press, o.b.i. Ferracute C1. 3" stroke. Press, o.b.i. No. 3 Toledo, 2‡" st. m.d. Press, No. 18 Toldo, 19 St. M.a. Press, hydraulic, 1,000 ton United. Press, s. s., 13"x19\forall^", 2" stroke, Press, No. 78 Toledo, 1\forall^" stroke, Press, No. 78 Bliss, t.r., 10" stroke.

Press, No. 92 B Toledo, d.c. 24" str. Press, No. 94-P Toledo, 42"x196". Press, No. 87 Niagara, screw. Press, No. 159 Toledo, screw

Press, No. 1989 101e30, acrew. Press, wheel. 200-ton Caldwell. Punch, hor., Cleveland, 1" thru 1". Punch, hand, Shatz, bar and angle. Punch & sh. No. 6 L. & A. ‡"thru ‡". Punch & sh., No. 24-U Buffalo m.d., Punch, multiple, No. 5 H. & J. 10'.

Punch, multiple, No. 5 H. & J. 10°. Riveters, air, hammer, spinning, Rolls, augle, 4°s4°'x§° W. & W. Rolls, bending, 8°x14 g. h. and. Rolls, bending, 12°x4° H. & J. d. e. Sand blast, Pangborn, 90°, £R.-l. Saw, band, metal No. 2 Klem, m.d. Saw, cold, 48° Newton, m. d. Saw, frict. Model 1-A Hunter, 24°.

Saw, friction, Nos. 2 & 3 Ryerson, Saw, hack, No. 5 Marvel, b. d. Shapers, 16". 20" 20" & 36" G. & E. Shaper. 20" Ohio crank. Shaper. 30" Ohio crank. Shaper, 20" Chickett Johnston, b. d. Shear, angle, 6" 6"x" Cleveland. Shear, aligator, 14". 2" 3" & 4". Shear, level, Lennox 1". Shear, level, Lennox 1".

Shear, gang slitter, No. 235-A Bliss, Shear, guil. No. 5 Cleveland, 34" sq.

Shear, sq., 20"x18 ga. Bliss power. Shear, square, 36"x16 ga. Pexto. Shear, plate.54"x4" Garrison 24" gap. Shear, plate.54" x#" Garrison 24" gap. Shear, sq. 12" x# gx. Kutscheid.
Shear, 12" x#" Wheeling, 31" gap, m. d.
Shear, 12" x#" Wheeling, 31" gap, m. d.
Straighter, 45" United, 16 ga. 13 rolls.
Straightener, 86" Nat. 14 ga. 17 rolls.
Straightener, H. & J. 46" x#" orlls.
Straightener, H. & J. 46" x#" orlls.
Straightener, hape. Abramson, 2".
Straightener, shape. Abramson, 2".
Straightener, No. 4 H. & J. 15" beams.
Straightener, e. C. Wallace, b. d.
Swaging machine., No. 3 Langelier,
Teating machines, 4008 & 100,000-1b.

Testing machines, 4000 & 100,000-lb. Olsen.

Tumbling barrel, 18"x36", b. d. Upsetters, 1" to 6" Welders, spot and butt.

### FOR SALE BY

Miles Machinery Co.,

Bulldozer, No. 2 Williams-White, Drill, 14", Foue Burt No. 25. Drills, radial, 3" and 4" American. Gauge blocks, Johansson No. 1. Gear hobbers, 18" & 24" G. & E., Grinders, 6"32" Norton. Grinder, crank, 16" x88" Landis, Grinder, surface, No. 2 B. & S. Hammer, 150 lb. Braddle Baker, Lathe, 14" x8" Hendey toolroom, Lathe, 14" x8" Hendey toolroom, Lathe, 16" x10' American, t. a. Lathe, 21" x8" Lodge & Shipley.

Saginaw, W. S., Mich.

Lathe, turret, 24" & 36" Bullard Lathe, turret, 2A and 3A W. & S. Millers, Nos. 1‡ AS. 2B and 3B Kearney & Trecker. Mill, boring, 36" Betts. Planer, 36" x36" 8 Gray. Planer, 46" x36" x16" Cincinnati. Press, No. 6 Adriance o. b. i. Press, No. 165 Toledo toggle. Shear, 16" x16" ga. Peerless. Shear, 16" x16" ga. 4" G. & E. Threader, 24" Laudis. Threader, 24" Laudis.

### FOR SALE BY

Davis Machinery Exchange, 1-3-5 So. St. Clair St., Toledo, Ohio

Bolt threader, ‡" Landis dbl. head. Bolt threaders, 1‡" and 2" National. Boring mill, 24" Bullard vertical, new era head. Drill, 20" Barnes camel back.

new erg head.
Drill, 20" Barnes camel back.
Drill, 20" Barnes, 4-spindle.
Drill, No. 310 Baker lwy. duty, (2).
Drill, 32 Carlton radial, g. b., a. p.d.
Drill, 3 Eicktord radial, g. b., a. p.d.
Drill, 3 gang radial, tapping attachment, universal table. a. b.

ment, universal table.
Drill, Aspindle Allen, h. s., b., b. prill, Aspindle Allen, h. s., b., b. prill, Henry & Wright, h. s., b. b. prill, Sipp h. s. b. b. (2).
Drill, No. 2 Avey, h. s. b. b. prill, 2-spindle, L. & G. h. s. b. b. prill, 2-spindle, L. & G. h. s. b. b. prill, 2-spindle, L. & G. h. s. b. b. prill, 1-24" Cincinnati s. h., b. g., p. f. p. f. prill, 6-sp. Nat. Acme horizontal.
Drill, 6-sp. Nat. Acme horizontal.
Drill, 6-sp. Nat. Acme horizontal.
Drill, 6-sp. Nat. Acme horizontal.
Grinder, No. 2 Gardner disc. comp.
Grinder, No. 4 Gardner disc. Comp.
Grinder of disc.

p. motor carive.
Grinder, No. 4 Oliver drill pointer,
Grinder, No. 4 Brown & S., plain,
Grinder, No. 18 Brown & S., plain,
Grinder, No. 20 Nakey Landis, p. sell-con.
Grinder, No. 20 Oakley univ., comp.
Groover, 42" Toledo power.
Hack saws, 646 Racine & Peerless.
Hammer, F Schuster riveving.
Keyssater, No. 2 Butts & Merrill.
Keyssater, No. 2 Davis, cap, 8".
Keyssater, No. 2 Davis, cap, 8".
Keyssater, No. 2 Davis, cap, 8".
Keyssater, No. 3 A Mitts & Merrill.
Lathe, 19"x10" Si'ney q. c. g.
Lattes, 14 "85', 16" Si'ney q. c. g.
Lattes, 14 "85', 16" Si'ney q. c. g.
Lattes, 14" Si', 16" Si'ney q. c. g. t. att.
Latte, 16"x8' Hender, c. g. t. att.
Latte, 16"x8' Walcott q. c. g. t. att.
Latte, 16"x8' South Bend, std. c. g.
Latte, e. g. x8' South Bend, std. c. g.
Latte, e. g. x8' American q. c. g., chuck.
Latte, latte, 18"x8' American q. c. g. e.

Lathe, 18"x10" American q. c. g., taper and relieving attachments. Mill, No. 1 Kempsmith universal. Mill, No. 2 LeBlond univ. index & vertical head. complete. Mill, No. 1‡ Becker-Brainard universal, complete.

versal, complete.
Mill, No. 3 Le Blond, univ., comp.
Mills, No. 14, No. 2 and No. 3 Cincinnati plain, all geared feeds.
Mill, No. 0 Steptoe, p. f.,
Mill, No. 0 Steptoe, p. f.,
Mill, Model C. Becker vertical.
Mill, Model C. Becker vertical.
Mill, No. 3 B. & S. vertical, s. p. d.

Mill, No. 0 Steptoe, p. 1.
Mill, A. B. Becker vertical.
Mill, Model C. Becker vertical. s. p. d.
Mill, No. 3 R. & S. vertical, s. p. d.
Mill, No. 6 Whitney hand, (6).
Mill, No. 12 B. & S. production, (2).
Miller, No. 1 Toledo b. b. hand (2).
Miller, No. 1 Toledo b. b. hand (2).
Milling and drilling machine, No. 1½
Knight.
Mibler, metal No. 1 Campbell,
Oil groover, Fisher No. 1.
Pressee, abort, No. 3, No. 5 Greenerd.

Presses.arbor, No.3, No.5 Greenerd, Press, No. 4 Toledoo, b.i., flywheel, Press, No. 4 Toledoo, b.i., flywheel, Press, No. 4 Amer. Can type P. Press, No. 8 Bliss, bench type (8), Press, No. 8 Bliss, bench type (8), Press, No. 8 I Consolidated, beuch. Press, 40 ton Manhattan screw Screw machine, No. 6 Warner & S. Screw machine, No. 7 Foster, Screw machine, No. 7 Foster, Lathe, 16"x8" Oliver q. c. g., engine, Screw machine, No. 4 Foster, Lathe, 16"x8" Oliver q. c. g., engine, Screw mache, 18"Cleveland Model A. Screw mche., 18"Cleveland M

vertical (5)

### FOR SALE BY

### Taylor-Hall Welding Corporation, 99 Hope Ave., Worcester, Mass.

Thomson No. 100, 20k. w. spot welder.
Taylor D-36-4, 40 k. w. spot welder.
Taylor D-36-4, 40 k. w. spot welder.
Thomson 38 k. w. spot welder.
Taylor-Winfield 2 k. w. spot welder.
Taylor-Winfield 2 k. w. spot welder.
Taylor-Winfield 398-5, butt welder, cap. 4".
Thomson 7A auto. butt welder, cap. 4".
Thomson 7A auto. butt welder, cap. 4".
New machine guarantee with every welder.

### FOR SALE BY

Scott-Bansbach Machinery Co., 4607 West 20th St., Chicago	
Automatic screw machines, No. 00 B. & S., ser. nos. 5155 & 5167, ea \$	450
Auto. screw mch., No. 0G Brown & S., serial no. 4290 with a. c. motor	800.
Automatic screw machine, No. 0 B, & S., serial no. 3830	325.
Auto. screw mchs. No. 0 B. & S. nos., 3340, 3495, 3831, slotting att. each	450.
Automatic screw mche, No. 6 B. & S. turret former, serial no 3123	200.
Automatic screw machine, No. 2 Brown & Sharpe serial no 7379	750.
Automatic screw machine, 14" Gridley 4 spindle model F	500.
Automatic screw machine, 14" Gridley 4 spindle model F	650.
Automatic screw machine, 21-3" Cleveland model A, square pan	500.
Automatic screw machine, 24-34" Cleveland model A. square pan	500.
Bolt cutter, 2" D. & H., double head	200.
Drill, 4-spindle L. & G., h. s., b. b., tapping attachment on 1 spindle:	
p. f. 2 spindles, I plain spindle	700.
Gear cutter, B. & S. No. 3 26" for spur gears	300.
Grinder, No. 190 Greenfield universal cutter and tool, complete	200.
Grinder, No. 2 Brown & Sharpe automatic surface, magnetic chucks	450.
Grinder, Capitol internal, capacity 3/16" to 2"x2"	150.
Grinder, Capitol internal, capacity 3/16" to 2"x2"  Grinder, No. 7 Gardner 30", b. b. with press, belted motor drive	325.
Lathe, 16"x6' LeBlond quick change	450.
Lathe, 18"x6' Hendey quick change, taper attachment serial no 19180	800.
Lathe, 18"x7' South Bend, q. c., a. c., motor drive and chucks	600.
Lathe, 18"x9' Chard semi-quick change gear	425.
Lathe, 18"x9' Chard semi-quick change gear  Lathe, 18"x8' Davis heavy duty, q. c. g., d. b. g., 14" 4-jaw chuck	550.
Lathe, 30"x13' H. S. & G. heavy duty, q. c., d. b. g. 16,000 lbs 1.	250
	350.
Miller, No. 3 Kempsmith, cone drive, with c/s and vise	600.
	450.
Miller, Cleveland universal, No. 1 g. h. fully equipped	750.
Miller, No. 2 MU. Garvin universal, fully equipped	550.
	150.
Miller, No. 5 Becker vertical, no rotary	400.
	125.
Miller, No. 21 Garvin power feed, oil pump.	150.
Miller, Hendey, Lincoln type	100.
	150.
Miller, Ingersoll slab, 42"x36"x9"	000.
Planer, 24x24x8 Fitchburg, 1 head	200.
Planer, 36"x36"x12' Cincinnati with 2 heads	200.
Press No 4 Rockford o b i nunch 24" stroke 3500 lbs	975
Press brake, 10' Ohl power, No. 10 gauge	500.
Screw machine, No. 1, B. & O. plain head, 13/16" capacity	225.
Screw machine, No. 0 Brown & Sharpe hand	150.
Separator, Curtis oil, I bushel	275.
	300.
Shaper, 20" Cincinnati, crank, back geared, vise and c/s.	550.
	750.
Shaper, 21" Milwaukee, b. g., with c/s and vise	700.
Turret lathe, 21x10" Milholland, for chuck and bar work	850.
Turret lathe, 34"x36" Acme with chucking equipment	500.
	300,
Wire straightener and cutter, No. 2 Hoefer, 9 to 16 ga, x2' to12'	200.

### FOR SALE BY

Herman L. Winterer, . 947-953 N. Front St., Philadelphia Pa.
Boring mill, Bement-Miles horiz, 4-4" bar with revolving table \$2,200.
Boring mill, 60" Niles car wheel
Boring lathe, Johnson journal bearing boring type (2) each
Drill press, 48" Almond, sensitive radial, post type
Drill, press, 24" Foote-Burt, heavy duty
Drill press, 24" Suyder, sliding head
Grinder, disc, No. 17 Besly
Lathe, 37#"x14' Johnson, d. b. g., q. c. g., taper attachment
Lathe, 32"x12' Pittsburgh, heavy duty, d. b. g., q. c. g
Lathe, 28"x11' Wickes, d. b. g., q. c. g
Lathe, 18"x10' Reed, p. c. g
Lathe, 16"x8" Hendey, p. c. g
Lathe, 14"x6' American, q. c. g. taper attachment
Milling machine, No. 3 Becker, universal with vert. attachment 700.
Milling machine, No. 15 Garvin
Moulding machines, Tabor, 14"x21"-13" cylinder (7) each 100.
Planer, 48"x48"x12' Gray, 2 heads
Presses, Waterbury-Farrel D. A. 24"-5" str., wt. 26000 lb. new (3) ca 1.000.
Punch, Cleveland multiple, 72", 15" throat, max. cap. 96" long
Punch presses, all sizes (15) steam pumps, air compressors & engines
Riveter air, 6' gap Allen, cap 12" rivets
Riveter, air, 6' gap Allen, cap g" rivets
Shaper, 16" Smith & Mills, with vise
Turret lathe, 3x36" Pratt & Whitney, hollow hex, d. b. g., q. c g 600.
Turret lathe, 3\(\frac{1}{2}\)"x28" Pond, triangular pattern
Many additional tools. Send for complete catalog.

### FOR SALE BY

### Brownell Machinery Co., 150 Pine St., Providence, R. I. BORING MILLS

36" Bullard New Era type. 42" Bullard vertical. DRILLS 28" Snyder sliding head upright. 2# Fosdick radial.

d-spindle Barnes p. f. GEAR CUTTERS AND GRINDERS. 3' Prentice radial

No. 3 B. & S cutter & reamer. 18" Diamond disc. 20" Blount wet tool. No. 3, Brown & S., spur gear 26"
No. 2 Brown & Sharpe surface.
No. 1 Brown & Sharpe surface.
No. 13 B.& S. universal & tool, Grand Rapids twist drill 21".

A0"x30' Fitchburg, 24"x16' Le Blond, q. c. g. | 18"x 8' Springfield "Ideal". 13"x 5' Blount speed.

No. 15 Garvin plain, 60" table feed. | No. 13-B. B. S. manufacturing. | Model "AB" Becker vertical. | Model "Model "AB" Becker vertical. | Model "Model "Mo No. 2 B. & S. plain, screw feed. No. 1 B. & S. plain, screw feed. No. 0 B. & S. plain, screw feed. No. 9 Bristol hand,

PLANERS AND SHAPERS 30"x30"x8' Cleveland open side. 24"x24"x6' Whitcomb-Blaisdell sec-20"x20"x4' Fitchburg. 16" Smith & Mills plain.

ond belt drive SCREW MACHINES & TURRET LATHES.

16° Warner & Swazey, g. f. h.

No. 4 W. & S. grd. friction hd., 14"

3"x36" Jones & Lamson turret.

MISCELLANEOUS. Nos. 0, 00 and 2 B. & S. automatics. No. 0 Brown & Sharpe plain hand, wire feed.

Arbor press, No. 4 Greenerd. Screw press, No. 3 Standard. Hammering mch., No. 2 Langelier. Hammer, pwr. forg., 80 lbs. Bradley. Tapping machine, No. 1 Garvin vert.

### FOR SALE BY

### Hess-Schenck Company, 3951 St. Clair Ave., Cleveland, Ohio

Boring machine, 24" bar Newark horizontal. Boring, drilling and milling machine, 64" bar Niles horizontal, floor type,

base plate 14x15', bars and face heads. Gear generator, 11" Gleason bevel. Keyseater, No. 3 Baker, 3x18 capacity.

Acyscater, NO. 3 Deker, axio capacity.

Lathe, 38x18 Niles, Bement, Pond triple geared, compound rest, chuck jaws.

Press, No. 3 American Can geared power.

Press, No. 21 V. & O. power punch.

Punch and shear, Style F Badger single end, 10" throat.

Screw machine, No. 04-6 Brown & Sharpe automatic, with motor in base.

Screw machine, No. 00-6 Brown & Snarpe automatic, with Shaper, 16" Gould & Eberhardt back gest crank. Shear, No. 14 Pettingell 30" rotary cutting and trimming. Slotter, 10' stroke Newton vertical.

Turret lathe, 28" Gisholt, 64" hole.

### FOR SALE BY

### McDonald Machinery Co.,

Air compressors, Curtis 10x10 m. d., double cyl.; DeVilbliss 8x6. Bolt machines, Landis & Acme 1 hd.,

1½" capacity.
Boring mill, Lucas No. 21 horizontal,
2¾": Woods 3". Boring mills, 4 Bullard 42" low price. Brake, D. & K. 6' 10 gauge, power. Cut-off mchs., 4 Davis 6" capacity. Drill, Moline 4 spindle and 32-spdle. Drill, Foote-Burt 4-sp. No. 2 gang.
Drill presses, Allen and Sipp 4-spdl.,
h. s., b. b., power feed to spindles.
Drills, Leland G1-sp. h.s., b.b. floor. Drills, Leland G 1-sp. h.s., b.b., floor, Drills, Spp 1-spindle, h. s., b. b., H. & W. 2-spindle. Drills, 20°, 34°, 28° 28″ b, g., & tap. Gear hobber, G. & E. 24″ Grinders, B. & S. No. 2 universal; B. & S. No. 2 surface, chuck and

generator. Grinders, modern internal; Blount 30", wet (3), Heald 8" mag. ck.; Landis No.1# int., Landis 16"x42", Grinders, St. Louis No. 9; Modern 12"x60" safety, 10 h. p. d. c. Grinder, Pratt & Whitney vert. surf.

Grinder, Cin. No. 12 univ. tool & c. Hack saws, 6x6 Racine & Peerless hi speed; Racine 8x8 h. s.; Atkins

hi speed; Racine 8x8 h. s.; Akkins 8x8′, h. s.;
8x8′, h. s.;
Keyseater, Mitts & Merrill No. 2.
Lathes, Hendey Ii″x8′ g. c. g.; yoke head; Davis 22″x10′ g. c. g.;
Sidney 16″x8′ g. c. g., LeBlond 16″x8′ Whitcomb-B. 22″x8′ g. c. g.
Monarch 16″x8′; L. & S. & Ciuti,
18″x8′, a. c. w.; American 22″x16′ g. c. g. 16"x6', q. c. g.; American 22"x10' q.c.g. geared hd.; American 16"x6'

q. c. g.; 40 assorted sizes, quick and loose change gear. Lathes. Greaves-Klusman 24"x16'

### 1535 N. Broadway, St. Louis, Mo. standard change with chuck,

Milling machines, Ohio No. 20 plain, Le Blond No. 3-H; Brown & S. No. 3; B. & S. No. 3-B pl., s.p.d.; American No. 12; Kempsmith No. 1

Cincinnati No. 3; Becker No. 25 all plain; Kemp No. 3; Cincinnati No. 1; Ohio No. 29 all universal; B. & S. No. 5 vertical; Cincinnati 18" mfg; Becker No. 2-H vertical. Milling and drilling mchs., Knight No. It with power feed, vertical

No. 12 with power feed, vertical. Pipe machine, Curiu 3", motor dr.; Merrill 4"; Curiu 22" to 12" m. d. Planers, Gray 28"x28"x6", 1 head: Cincinnati 38"x38"x18" 2 heads; Pond, 36"x38"x18" 2 heads; Pond, 36"x38"x18" 24"x24"x6"; Gray 24"x24"x6"; Island. Punches, Reade 18" s. e., 4" in 4". Punch presses, 4 Consolidated No. 2; Federal Nos. 1, 2, 3 and 4; Bliss No. 19; 2 horn presses; Niagara

No. 19; 2 horn presses; Niagara No. 3; Sidney No. 2, o. b. i.

No. 3; 2 horn presses; Niagara No. 3; 5inery No. 2, 0. b. 1.

Screw machine, Cleveland 22 auto., P. & W. No. 24 hand; Foster No. 3 hand; Woods No. 2 tilted turret, Milholland No. 4 b.g. hand; Foster No. 7 hand b. g.; W. & S. No. 1.

Shaper or slotter, yetr., P. & W. 6'. Shapers, S. M. 16' 23''; Queen City 24' back geared; G. & E. 16'', b.g.; Niles traveling head; Milwaukee 16'' b.g.; Walcott 20'' b.g.; S. & M. 24'' and 24'' b. g.; Ohlo 16''. Cinclinual 20'' b. g.; Potter & J. 16''. Shapers, 6'' thr. totary slitting, (2), Square shears, Niagara 62'' power. m. d. 18-g.; Ohlô power 16 gauge, Steam hammer, Miles-B. 1100 lbs. Thread miller, Lees-Bradner No. 54. Turret lathes, Warner & S. No. 2A.

### FOR SALE BY

558-560 W. Washington Blvd., Chicago, Ill. The Reeve-Fritts Co., Drill, 3-spindle Washburn with p. f. Grinder, No. 2 Wisconsin universal. Lathe, 14x6 Hendey, q. c. g. Lathe, 14x8 Champion, q. c. g. Lathe, 18x6 Ryerson q. c. g., taper.

Miller, No. 2 Rockford plain, h. d. Planer, 24"x24"x8' American. Shaper, 15" Potter & Johnston univ. Shaper, 20" Ohio heavy duty. Shaper, 24" Rockford, b. g.

### FOR SALE BY

Brown Machinery Co., Drills: 24", 26" and 32" Barnes and Rockford; 4-spindle Moline hole hog No. 66D Gear hobbers, G. & E. 12" and 24".
Grinders: No. 6 Besly dbl. spindle;
No. 229 Badger auto, disk; 12x30"
Modern, plain s. c. c. s.; No. 12
Brown & Sharpe, univ., tool, m.d.

Hammer: 40 lb. Bradley, helve; 50 lb.

Mayer upright. athes, 30" x 12' Blaisdell; 28" x 12' working machinery. We have the stock,

2323 N. 9th St., St. Louis, Mo.

Putnam, hvy, duty; 20"x12" Lodge & Shipley, q. c. g.; 18"x8" Prentice geared head; 16"x8" Lodge & Shipley q. c. g.; 16"x6" Monarch q. c. g.; 14"x8" and 12"x4" Seneca Falls q. c. g. Falls q. c. g. Millers: No.2 Hendey-Norton, univ.;

Millers: No. 2 Hendey-North during, No. 3 Fox; No. 4 Hendey Lincoln. Press, No. 7 Zeh & Hahneman. Threaders: 4" Geometric; National 14" double bd.; No. 734 Greenfield.

Write for prices: send us your inquiries for shop equipment and sheet metal

### FOR SALE BY

### Norton-Broadway Mchy. Co., Sixth & Baymiller Sts., Cincinnati, O. LATHES

MILLING MACHINES. No. 2 LeBlond universal. 6' American, single pulley......\$1450. Cincinnati-Bickford.... MISCELLANEOUS. 

Motors, up to 75 h. p., 220 v., 3 ph. 60 cycle.

"x12' Sidney, q. c. ... No. 2 Cincinnati vertical, high

¥

No. 4 Cincinnati vertical...... \$1250.

Stitching machine, Morrison, 

### FOR SALE BY

United Mchry. & Supply Co., Bolt cutter, 3" National single. Bulldozers, W. & W. No. 3 & U-29. Drill, Foote-Burt rail, 8 spindles. Hammers, 50 and 100 lb Lathe, American 18"x12' q. c. Lathe, wheel, 23" Cincinnati.

1241 Walton St., St. Louis, Mo. Miller, Brown & Sharpe vertical. Pipe threader, Oster 1 to 4" dies. Presses, Swaine Nos. 29, 31, 4 Presses, No. 2 Consolidated (2). Punch, gang, 32" bet. housings. Rolls, (3), 7'x7", 6'x5", 6'x9".

### FOR SALE BY

Foster Machinery Company, Bending rolls, 8'x Pyramid drop

end. Brake, 6', 10 ga., box and pan

Drill, No. 2 Bausch multi-spindle. Draw bench, 12' Waterbury-Farrell. Hoists, elect., 3, 5 & 10 ton Euclid. Keyseater, Baker No. 0, cuts 1"

Lathe, 20"x52' American geared hd. Lathe, 16"x10' Whitcomb & Blaisdell,

2613 E. 73rd St., Cleveland, Ohio

Lathe, 19"x12' LeBlond heavy duty. Punch, EF Cleveland, 72" throat. Riveter, 3-A High Speed.

Riveters, air, 30 ton & 50 ton Hanna. Riveters, air, 30 ton & 50 ton Hanna. Rotary planer, 50" Cleveland. Shaper, 24" Gould & Eberhardt. Shear, 12'x14 ga. Loy & Nawrath. Turret lathe, No. 3-A Warner & Swasey univ., chucking equipt. Welder, National butt, cap. 1".

### FOR SALE BY

The O'Brien Machinery Co., Automatic No. 00G B. & S., serial

No. 9475. Automatic, 13" Cone 4-spindle (new

1929). Automatic, 2 "-F Gridley, 4-spindle. Automatic, 1"-G Gridley, 4-spindle

Automatic, § -t-9 Gricley, 4-spindle.
Automatic, 9/16" Gridley, 4-spindle.
Automatic, No. 52 Nat'l Acme, 4-sp.
Bending roll, 25' H. & J. • cap.
Drill, 20-spindle Natco, No. 2 taper.
Drill, 34" American triple purpose

radial. Drill, 4' Cincinnati Bickford radial,

moto. rive. Drill, 34" Aurora upright, sliding head, motor drive

nead, motor drive, Grinder, No. 11 B. & S. cyl. 6"x36". Hammer, No. 1 Nazel belt drive, capacity 2"x2". Hammer, 2000 lbs. Chambersburg, double frame, steam forging.

Hammer, 1100 lb. N. B. P., sgl. fr. Lathe, 19"x8' Sidney heavy duty, belt drive, quick change. Lathe, 36"-60"x32' McCabe, belt

drive.
Lathe, 20"x20' Lodge & Shipley
belt drive quick change gear.
Lathe, 46"x16' Lodge & Shipley,
all geared head.

athe, 30"x30' Harrington. Miller, No. 3 Becker universal Miller, No. 3 Becker universal, table 12"x40"

Miller, No. 3B Brown & Sharpe pl. Miller, No. 4 Brown & Sharpe plain.

113 N. Third St., Philadelphia, Pa. Milling mche., No. 3 Garvin duplex. Pipe machines, 2", 4", 6", 8" & 12" Oster, Cox, Williams, Eaton-Cole

& Burnham and Jarecki makes, belt or motor driven, comp. stock. Pipe machines, Oster portable, gas. drive, all sizes.

Planer, 30"x30"x6' Detrick & Harvey openside, belt drive.
Planer, 24"x24"x8' Cincinnati belt

driven, one head.

Planer, 36"x36"x12' Cincinnati, 2 hds. Press, No. 73# Blisstrimming press. Press, No. 37 Niagara, 1100 lb. flywheel, solid back, Press, No. 123 Ferracute, geared, double acting, flywheel 478 lb.

Press, DD3 Ferracute, dbl. acting. Punch, No. 52 Beloit, belt, capacity

9"x".

Punch, No. 1g H. & J. 20" thrt., [x]

Punch and shear, 36" Hilles &
Jones, cap. 14"x1", belt drive.

Punch and shear, 24" Southwark

arch jaw, cap. 4"x4", motor drive.

Saw, 30" Espen-Lucas, cap. 8".

Shaper, 24' Gould & Eberhardt

belt drive.

Shear, angle, Type C Long & A. double, capacity 8x8x1 angles. Shear, Niles, plate splitting, I" cap-

acity, motor driven.

Shear, 8' Covington, squaring. gap pattern, \$' capacity.

Slotter, 10'—12' Dill, belt drive.

Turretlathe, No.'6Warner & Swasey

wire feed.

### FOR SALE BY

Interstate Machinery Co., -

Bending rolls, all sizes.

Brakes, 8 & 10' Chicago pwr., 10 ga,
Brake, press type 8' 10 ga,—6' \$". Drill, 4-spindle Kokomo hi-speed. Presses, 64 Bliss d. c., 48" bet, upr,

130 So. Clinton St., Chicago, Ill. Presses, Nos.71,73 Swaine d.c.,4" s.

Shear, 72" Niagara gap, I ga. cap. Shears, 10'x3/16" Niagara motor dr. Shears, Marshalltown rotary, 10 ga. Welder, 30 k.w. Federal spot, 220 v.

Complete stock of sheet metal machinery.

### FOR SALE BY

524-26 W. Van Buren St., Chicago, Ill. B. L. Saltzman.

Brake, power, 8' 12 ga. Drills, 14" to 32". Drills, 21" Baker hvy. duty No. 216. Drills, 32" Hamilton. Hole-Hog, Moline 6-spindle, No. 7. Horn press, Bliss, No. 39. 1‡" stroke. Lathes, turret, Gisholt 21".

Lathes, turret, J. & L., lap; 2-1/16"; 2 spindle 3-1/16". z spindle 5-1/16". Lathes, Lo-swing, 7"x36" taper att. Punch press, No. 20-B Bliss o. b. i. Shear, sq. power, 54" Peerless 16 ga. Shear, sq. power, 42" Niagara 14 ga.

Motors, } to 200 h. p., a. c. and d. c.

### FOR SALE BY

### Wachs-Grogg & Co.,

Telephone: Randolph 1822 Boring machine, Giddings & Lewis No. 32, with a. c. motor. Boring mill, Bullard 60" Broaching machine, American No. 3. Broaching machine, American No. 3. Drill, Clincinnat Bicktord 3' radial, Drill, W. E., gang 6' radial. Drill, Fose-Burt 24' heavy duty, Drill, Harrington, 61 B, multiple. Drill, Woodward & Rogers 8-spdi. Drill, Pratt & Whitney No. 12 mult. Fox lathe, Warner & Swasey No. 2. Grinders, Nos. 4 and 6 Badger disc. Grinder, No. 8 Modern internal.

117 N. Jefferson St., Chicago Hammers, 60 & 80 lb, helve. Lathe, Bradford 32"x18 Lathes, Rockford 15"x6'. Lathe, Whitcomb-Blaisdell 18"x8' Milling machine, Cinn. No. 2 univ. Milling machie, Cinn. No. 2 univ. Milling mche., Rockford No. 0 plain Pianer, Belmer, 48"x48"x12', 3 hds. Press, Niagara No. 35 o. b. i. Press, new Swaine No. 73 dbl. crank Screw machine, Foster No. 4 Shaper, Walcott, 20" power d. f. Turret lathe, Pratt & Whitney #"x4\frac{1}{2}"

Turret lathe, Warner & Swasey No. 2 A, chucking machine,

k

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### FOR SALE BY

### E. L. Klauber Machinery Co., 320 South Third St., St. Louis, Mo.

LATHES 9"x14" Porter-Cable.

Hammer, Mayer 100 lb. upright.

No. 2 Garvin p f. t. No. 2 Wood tilted turret.

Drill presses, 50 from 10" to 34" Grinder, combination drill & cutter, Grinder, No. 3 B. & S. universal, Miller, No. 2 Cincinnati universal. Planer, 20"x20"x4'

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Planers 24\*x24\*x81 Gray Planer. 27"x27"x8" Woodward & Powell. 26"x26"x10" Gray, 2 heads. 26"x26"x12" Whitcomb-B., 2 heads. 96"x96"x14" Betts Planer, 4 heads. Radial and Upright Drills 4' & 3' Cincinnati-Bickford, S. P. D. 31 & 41 American Tr. Grd. SPD, MD 228 Barnes Camel Back. No. 2 Colburn Mfg. H D. 2-spindle. 3-sp. Avey High Speed Ball Bearing. 4-Spdl. Foote-Burt Independent Feed. 6-spindle Rockford 20" B. G. P. F. No. 30 Natco Multiple Spindle.

Shapers 16" and 20" Gould & E. High Duty. 24° Gould & Eberhardt; High Duty. 24\* Queen City heavy duty, cone dr. Miscellaneous

No. 3 J. N. LaP. Broaching Mche. Nos. 1 & 2 Davis Keyseaters, No. 3 Baker Keyseater, No. 42 Toledo Horning Presses. No. 94 Fernacute Dbl. Cr. Grd. Press. No. 56 Adriance Dbl. Cr. Str. S. Press. No. 76 Toledo Open Bk. Gap Frame.

10' Robinson Press Brake, 10 gauge.

Wickes Punch & Shear, 46" throat, 11/4" thru 11/4". High Spd. Rivet., IAA; 11/2B: 2AHD, No. 2 Garvin Vertical Tapper, No. 2-A W. & S. Turret Lathes, No. 4 W. & S. Univ. Turret Lathe, No. 1-B Foster Univ. Tur. Lathe m. Shuster Wire Mehes. 1/4" to 3/4" Capts.

# QUALITY-SERVICE-ECONOMY

### Drills

- 1-Demco S.S. High Speed B. B. 2-Colburn Size D-2 Hvy. Duty. 2—Acme 6D Semi-Auto, Drilling, 1—American 26" S. S.
- 7-Aurora 21-24" S. S
  - -Barnes Camel Back 248. 6-Cincinnati 21-26" S. S 1-Cinti.-Bickford 4' radial, s.p.d.
  - 3-Superior 20\*-26\* S. S.

### Drills -- Multiple

- 1—No. 2—2-spindle Avey Drill. 2—3-spindle Leland-Gifford, p. f. 2—2-spindle Leland-Gifford.
- 2-2-spindle Henry & Wright. 1-2-spindle Sipp.
- I Kingsbury 4-sp. Horiz. D.M.D. I No. 2 Edlund High Speed.
- -Pratt & Whitney 12-spindle. 1-No. 5 Fox.

### Gear Cutters

- 3-Fellows 36"
- -Brown & Sharpe No. 3-26". 2 No.6 G.& E.S. T.&B.T. Mult.

### Grinders

- 1-Diamond No. 1 Univ. Tool & C. -Thompson Tool & Cutter, Surf.
- -Norton Tool and Cutter. -Norton Pl. Ext. 6x32 to 14x72.
- -Heald Int. No. 65.
- 1—Besly No. 14 Disc. 1—Besly No. 6 Dbl. End. Auto. I-Gardner Disc
- 2-Rivett No. 205 Radial.
- 1—Rivett Univ. No. 6 Internal. 2—Landis No. 3 Universal.
- 1-Landis 16x48 Crank Shaft
- -Bryant Chuck. Nos. 6 & 15A. -Besty No. 17 double end.

### Lathes - Engine - Miscellaneous

- thes Engine Miscellaneous I—American 20x10 B. G. Q. C. 5—Lodge & Shipley 16a6, 18x8, 22x10, B. G., Q. C. 2\_LeBlond 17x12, 21x12, B.G. 5—Greaves & Klusman 18x6, 18x8, 30x8, B. G., Q. C. 1—Chard 24x11 B. G., Q. C. 1—Chard 27x11, B. G., Q. C. 1—L. & S. Duplex 12x4\*G.C. Fin. 2—Sundstrand 9\* Prod., Motorized 15 Finishers 11x 6x12.

- 1-Fitchburg 31/2x60 Low Swing.
- I Putnam 20x 12.
  I 14\*x8¹ Carroll & Jamieson.
  I Sidney 14x6¹B G.,Q.C.,T.A.
  I Bradford 16¹B G.,Q.C.,T.A.
  2.—LeBlond Nos. 6 & 9 Multi-cut.

### The Indianapolis Machinery & Supply Co., Inc. 1960 S. Meridian St.,

### Lathes-Turret and Screw Mchs. 1-Foster No. 1-B-20° swing.

- 1—Foster No. 1-B—ZU\* swing.
  2—Gishoht No. 2, D. M. D.
  2—21\* Gishoht.
  1—3-A Warner & Swasey.
  2—2-A Warner & Swasey.
  2—2-A Warner & Swasey No. 6.
  1—Warner & Swasey No. 6.
  2—Millholland (\*x19% D. M. D.
  2—Piatt & Whitney 20\* Milling Machines-Vertical
  - I-Knight No. 2 Vertical.

# I — Becker No. 5. I — Bullard 42\* Boring.

- Milling Machines-Horizontal
  - I—Milwaukee No. 1½B.
    I—Milwaukee No. 3B, d. o., v. h.
    I—LeBlond No. 4 Plain.
    I—Kempmith No. 2 Plain.
    I—No. 21 Brown & Sharpe, s.p.d.

  - -11/2-B Brown & Sharpe, s.p.d. 1-Steptoe Hand with Vert. Att.
  - I-Garvin No. 14 2-Standard Hand.
- 6-Gooley & Edlund Type A 38.

### Presses-Punch

- 2-No. 14 Williams-White. 2-Consolidated No. 4 O. B. I
- I Marshalltown No. 3 O. B. I. I Bliss No. 2 O. B. I.

### Planers

I-Cincinnati 42x36x161

### Screw Machines-Automatic

- 4—Gridley ¾ 4 4-spindle.
  1—% Gridley 4-spindle.
  6—National Acme Nos.
  and 55 Multiple spindle.
- 1-Millholland No. 2 Hand, Motor. 1-Millholland 1%.

### Shapers

-American & Whipp 16 Crank. 1-Potter & Johnston 24<sup>®</sup> Crank. 2-Gould & Eberhardt 24<sup>®</sup> Crank.

I-Niagara 81 Squaring Motorized. 2-Quickwork Rotary, 60" throat.

### Miscellaneous

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  Cutting & Coiling, Baird No. 2.
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No. 3 Consolidated open back inclinable, 3<sup>st</sup> stroke. No. 2 Consolidated open back inclinable, 2<sup>1</sup>/<sub>2</sub><sup>st</sup> stroke.

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Two 6\*x32\* Norton plain grinders, excellent condition.
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2<sup>8</sup> Model G Gridley auto. screw machine, with A. C. motor. Three 24<sup>8</sup> Cincinnati automatic millers, one never used, each with 5 H. P. A. C. motors.

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Five 8"x18" Cincinnati grinders, self contained, 10 H. P. A. C. motors, one used a year, others only three months.

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7-Kempsmith Plain Nos. 23. 2-Kempsmith Univ. Nos. 2, 3. 5—LeBlond Univ. Nos. 2, 2‡, 3, 4. 2—Knight No. 2, No. 3. 5—Becker No. SD, CS, 2, 5, 6,

PLANERS -24x24x10 W-Blaisdell. 1-30x30x8 N-B-Pond -30x30x12 Cincinnati

-36x24x12 D. & H. Openside.

--38x38x12 D. & H. Openside. --38x38x3 Cleveland Openside. --38x36x10 N.-B. Poud. --36x36x14 N.-B. Pond. --42x42x12 N.-B. Pond. --42x42x22 Cincinnati. --60x60x18 Cincinnati.

-96x48x12 D. & H. Openside.

-90" Putnam Wheel.

-84x36 Putnam.

-72x28 Putnam. -72x58 N-B-Pond. -59x28 N-B-Pond. -56x18 N-B-Pond.

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-42x39 Putnam.

-42x29 N-15-Pond.

-36x14 Bridgeford.

-30x12' American.

-30x12' American.

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-21x10 Le Blond. -18x10 Lodge-Shipley.

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-96" Betts Vertical.
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-62" N.-B-Pond Vertical.
-62" N.-B-Pond Vertical.
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2-14" Fays

TURRET LATHES AND SCREW MACHINES 9—W. & S. Nos. 2, 4, 6, 2-A, 3-A. 3-Libby 18", 26", -1", 14", 2", 3", 4-Acme 1" 14", 2", 3", 4-Acme 1" 14", 24", 3", 4-Gisholt 21", 24", 28", 34".

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1-7 Dreses Plain.
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28" & 16" G. & E. H. D., B. G. Crank. 20" Columbia H. D., B. G. Crank. 25" Springfield H.D., B.G., Crk. s.p.d. 16" Hollingsworth Hvy. Duty B. G. C. 25", 20" S. & M. h. d., b. q., Crk. 24" G. & E. Hi-Duty B. G. Cr. arr. m.d. 36"x36"x10"Cin. H.D., Tu-Speed 2 hds. 20" Cincinnati H. D., B. G. Crank. p. d. heads, box table.

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SHEARS, Beatty 71 1/162, Long & A. 41 1/22, Ewart & Kutscheid, 51 14 ga.

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No. 52 National Acme automatic. No. 53 National Acme automatic.

No. 54 National Acme automatic. 21" Gisholt, motor drive. 24" Gisholt, motor drive.

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16" O. & S., b. grd., new, low price. 20" Smith & Mills back grd. crank. 24" Rockford, back geared, crank.

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Band saw, Clark, compound. Band saw, Napier 10"x10". Blower, No. 6 Piqua, pressure. Blower, positive pressure, Leiman Boring mill. Colburn No. 3, tur. hd. Brake 10'. Keene. 18 ga. Broaching mchs., 1 and 3 LaPointe.

Compressors, 6x8, 8x8 and 9x8. Furnace, Weco electric. Gear cutter, No. 3-26" B. & S. Gear miller. Bilton No. 1.

18"x8' American qk. ch., taper att. 18"x10 American, quick change. 20"x10' Hamitton, rapid production. 24"x14' LeBlond. 24"x24' Perutice, with raising block. 8x60" & 3\pmux60" Fitchburg, Lo-Swing

National Acme automatic.
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2x24 and 3x36 J. & L. No. 1 Foster, 13/16" capacity, (2). 1" Pratt & Whitney.

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Ingersoll 24" x 20" x 9' horizontal motor drive 18" Cincinnati automatic. Type B Gooley & Edlund.

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Planer, 36"x36"x14' Gray, 2 heads. Planer, 42"x42"x12' Gray, 2 heads. Punch & shear, 4x4x10" throat. Riveting hammers, Nos. 1, 2, 3, 4-A High Speed. High Speed.
Sand blast, Boland.
Scale, 1890 lb. Toledo, dial type.
Shear, 38", 18 gauge, power.
Shear, No. 362 Robinson.
Shear, 10' Loy-Nawrath 3'/18" cap.
Shear, circular, Pettingell, 60" thrt.
Threading mche., W. & P. 2-spindle.
Washing machine, parts Blakeslee.

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3—No. 65 Heald cylinder.
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2-16"x8" Henedy q. c. tie-bar head
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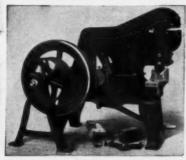
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